S. A. & S., Ltd.—750—16/7/1906. F.

C.P. 85
1906–1907

THE HERTFORDSHIRE COUNTY COUNCIL.

ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH

FOR

HERTFORDSHIRE

FOR THE YEAR 1905.

BY

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COUNTY MEDICAL OFFICER OF HEALTH.

PREPARED BY DIRECTION OF THE COUNTY COUNCIL
FOR THE COUNTY OF HERTFORD.

CONTENTS.

To the Chairman and Members of the County Council of Hertfordshire.

My Lords and Gentlemen,

I have the honour of presenting to you my Annual Report on the Public Health of the County in 1905, the fifth since my appointment.

During the first quarter of 1905 my place was filled, in my absence abroad for purposes of study, by Dr. Gerard C. Taylor, now County Medical Officer of Health for Berkshire, to whose able work much of the information in these pages is due.

A fresh rearrangement has taken place in the form of this Report, the Tables being incorporated into the text for the sake of convenience. The endeavour has been continued to make the Report a useful index to all conditions concerned in the Public Health of the County in 1905. A mere recital of facts and figures, dealing largely as they must do with technical subjects in technical terms, would be of comparatively small value. In every section, therefore, there have been added the chief arguments as to the bearing of facts shown and action taken or proposed; and comparative figures have been given for other districts, other countries, and previous years, in order to give the necessary sense of proportion and a criterion of progressive improvement or deterioration. In order, finally, to assist in an efficient solution of the problems to be faced, the result of previous action is given, so far as is possible, and the financial data, the chief key to all public action, are discussed.

Being presented to a non-medical body of men, this report does not purport to be a scientific but a practical treatise. Its information, moreover, is gathered to a large extent at second-hand. With the further arrangements as to your Medical Officer of Health, agreed to by the County Council on May 7th, 1906 this second-hand account will in future to some extent, it is hoped, be checked by my personal experience of the details concerning the more important problems under discussion. From the cordial relationship at present subsisting between the District Officials and myself, I have every reason to hope that our co-operation in the future may be of mutual service to ourselves and of advantage to the Public Health of the County, which is our common care.

I venture more especially to draw attention to the following subjects in this Report :—

Date of receiving Annual Reports of District Medical Officers (p. 13) ;

Birth-rate and school education (p. 19) ;

Infant Mortality in certain Districts, with especial reference to the prevention of diarrhœa (p. 22 and tables 11–13) ;

School-closure and exclusion from school, with especial reference to scarlet-fever, diphtheria, measles, and whooping-cough (pp. 52, 54, 56, 60) ;

The recent outbreak of Scarlet-fever in and around Hemel Hempstead (p. 55) ;

Dunn's Disease, or Catarrhalis Fever (p. 57) ;

The continuance of Diphtheria in certain Districts, owing to defective sanitation (p. 60) ;

Puerperal Fever and Midwives (p. 62) ;

The question of isolation for scarlet-fever, with especial reference to the proposed hospitals at Hitchin, Barnet, St. Albans, and Hemel Hempstead (pp. 63–6, 69, 70) ;

Steam-disinfectors (p. 73) ;

Water-supply in the following Districts :—Barnet, Harpenden, Hoddesdon Urban and Ashwell, Hemel Hempstead (Markyate Street), Hertford, Hitchin, and St. Albans Rural (pp. 81–8) ;

Drainage and Sewage Disposal in the following Districts and Areas :—The Lee Valley, Baldock, East Barnet Valley, Harpenden, Hitchin, Sawbridgeworth, Stevenage, Watford Urban, and Ashwell, Barnet (Shenley), Hatfield (Little Heath), Hemel Hempstead (Markyate Street), Hitchin, St. Albans (Wheathampstead), and Watford (Chorleywood) Rural (pp. 89–101) ;

Disposal of House Refuse in the following Districts :—Rickmansworth, St. Albans, Ware Urban, and Ware Rural (pp. 102–4) ;

Housing in the following Districts :—Baldock, Hitchin, and Hoddesdon Urban (pp. 105–6) ;

Milk Supply (pp. 112–5) ;

Factories and Workshops (p. 117 and tables 37–8) ;

Midwives Act (pp. 120–3, table 39, and map).

I have to thank the District Medical Officers of Health, the Clerks of District Councils, the members and officials of the County Council, and more especially those of the District and Parish Councils' Committee, for their continued courtesy, individual and collective, and for their continued help in the often difficult and always responsible work which it is my privilege to undertake.

I am, my Lords and Gentlemen,

Your obedient Servant,

FRANCIS FREMANTLE,

County Medical Officer of Health.

GUY'S HOSPITAL,

11*th June*, 1906.

INTRODUCTION.

The sanitary service of a county has until lately been entirely uncentralised. Hertfordshire is divided into thirty-two sanitary districts, and each district has its sanitary authority, with a Clerk, an Inspector of Nuisances or Sanitary Inspector, and a Medical Officer of Health as its executive officers. The general sanitary authority for each district is the Urban or the Rural District Council as the case may be, or, in the case of cities and boroughs, the Corporation or the Borough Council. Under these, by the Local Government Act of 1894, Parish Meetings and Parish Councils also have certain sanitary powers. County Councils have certain powers of supervision and control over the District and Borough Councils, and have recently appointed County Medical Officers of Health as their advisers in sanitary subjects.

Every Medical Officer of Health is obliged annually to furnish his Council with a report for the year, and to send duplicate copies of such report to the County Council and to the Local Government Board, the supreme sanitary authority of the United Kingdom. It is on these District Reports for the year 1905 that this county report is based.

The main work of sanitation, therefore, depends on the District Medical Officers of Health and Sanitary Inspectors, and to them and to their Councils is due the chief credit of having reduced the annual death-rate from 22·4 per 1000 living in England and Wales to 15·2 during the last fifty years. For them it is a difficult, an honourable, and often a most thankless task. Most District Medical Officers of Health are gentlemen in private practice, and their duties frequently call on them to report the insanitary condition of cottage property belonging to some of their most influential and wealthy patients, frequently to propose schemes for water-supply, drainage, and provision of hospital accommodation, the advantage of which lies more in the future than in the present, and is not apparent to the general public. The proper exercise of their duties, therefore, may involve, and frequently has involved, them in considerable social and financial difficulties, for which their very moderate and

often wholly inadequate stipend is no sufficient remuneration. Having independently, therefore, had the privilege of seeing a good deal of their work, I feel justified in saying that the manner in which for the most part they have carried out their duties deserves the very highest recognition from the public whom they have so faithfully served.

This Report is based upon their annual reports to the District Councils of Hertfordshire for the year 1905. It sums up for the whole county the facts and figures thus given; and by the use of the census reports for 1891 and 1901; of the annual reports for London and the great towns; of the Registrar-General's annual report for 1904, and annual summary for 1905; of Reports of Royal Commissions, and of sundry other sources of information, the sanitary state of the county is presented to the lay reader in its true relation to the health of the country at large. The earlier presentation of the Report this year, not yet sufficiently early for its purpose, prevents a comparison being given, as in previous years, with the figures for other counties. Only one other English county has yet issued its Annual Report for 1905, and that is of no use to us in this connexion.

Throughout the report Urban Districts are printed before Rural Districts; and Districts are arranged and numbered in alphabetical order throughout. All tables of figures are now incorporated into the text, except for that giving the Chief Statistics of each District, printed on a flyleaf at the end.

The County Medical Officer of Health will be glad to receive suggestions with a view to future reports, to assist District Medical Officers of Health in any way that is in his power, and to give what help he can by personal inspection or in writing to District Councils or other bodies or individuals in the county that may desire his advice.

In the year 1905 the County Council decided either to take action or write letters with regard to certain matters, and the following references will show what has been done in each case :—

Action taken as the result of the Report for 1904.

1. See pages 63–6, *Hitchin*.—The County Medical Officer of Health has held a Local Inquiry at *Hitchin* as to the necessity for the establishment of an Isolation Hospital or Hospitals for the use of the inhabitants of the Urban District of *Hitchin*, *Stevenage*, and *Baldock*, and the Rural District of *Hitchin*.

As a result of his Report the County Council are about to appoint a Committee to hold an Inquiry into the matter.

2. See page 69, *Harpenden.*—Local Inquiries have been held as to the provision of an Isolation Hospital for the use of the inhabitants of the City of *St. Alban*, the Rural District of *St. Albans*, and the Urban District of *Harpenden*, with the result that an Agreement is being prepared for execution by the three District Councils concerned.

3. See page 67, *Berkhampstead.*—A Local Inquiry has been held as to the provision of Isolation Hospital accommodation for the Urban District of *Berkhampstead* and *Tring*, and the Rural District of *Berkhampstead*.

Upon a consideration of their Report the County Council resolved that so long as the existing arrangements continue between the Urban District Council of Great Berkhampstead, the Urban District Council of Tring, and the Rural District Council of Great Berkhampstead, and the circumstances as to the Isolation Hospital accommodation remain as at present in the Districts concerned, no steps be taken by the County Council with regard to the provision of further Isolation Hospitals for these Districts, provided that the Aldbury Isolation Hospital Committee at once acquire sufficient land to enable them to erect thereon an additional block of 8 beds divided into 4 wards, when the necessity for further accommodation arises.

4. See page 70, *Hemel Hempstead.*—Further Local Inquiries have been held as to the necessity for the establishment of an Isolation Hospital for the use of the inhabitants of the Borough and Rural District of *Hemel Hempstead*, with the result that the Councils are taking the necessary steps to obtain from the Local Government Board a Provisional Order authorising the formation of an Isolation Hospital District.

5. See page 66, *Barnet.*—The Barnet Isolation Hospital Committee have had plans prepared for a Hospital for 18 beds made up of one block of 10 beds divided into 2 wards, and one observation block of 8 beds with an administrative block reduced to some extent.

Serious complaints have been received from the neighbourhood as to the cost of the Hospital, and the matter has been postponed to enable the Committee to consider in what way a reduction in the proposed expenditure can be effected.

6. See page 80, *Baldock.*—The Urban District Council of *Baldock* are engaged in negotiating with the Garden City Company for water.

7. See page 85, *Buntingford.*—The *Buntingford* Rural District Council have sunk their well and received sanction for a loan to complete their works. The Public Works Loan Board will advance the money, and tenders will be considered on July 5th, 1906.

8. See page 84, *Berkhampstead* Rural District.—Certain landowners in the villages of Long Marstone and Wilstone, within the Rural District of *Great Berkhampstead*, have taken steps to provide an efficient water supply for those villages.

9. See pages 84–8.—Letters have been written to the Clerks to the *Berkhampstead* Rural District Council, the *Hadham* Rural District Council, the *Hemel Hempstead* Rural District Council, the *Hertford* Rural District Council, the *Hitchin* Rural District Council, and the *Welwyn* Rural District Council, requesting them to provide a proper water supply for their Districts.

10. See pages 120–3.—The Medical Officer of Health has been engaged in inspecting the various Registered Midwives in the County, and various cases of complaints against Midwives have been dealt with.

11. See pages 89–90.—Several conferences have been held with the various District Councils in the Valleys of the Lee and Stort and with the Metropolitan Water Board with reference to the drainage of those Valleys, and particularly with regard to the Metropolitan Water Board (Lee Valley) Bill of 1906.

12. A complaint as to the pollution of Dollis Brook, Totteridge, has been dealt with.

13. See page 58.—Copies of the Memorandum prepared by the County Medical Officer of Health on the subject of the epidemic simulating Cerebro-Spinal Meningitis in the east of the County in the Winter of 1904–5 have been circulated amongst various District Councils and Medical Practitioners throughout the County.

14. See page 32.—Cards prepared by the County Medical Officer of Health, containing hints on the feeding and care of infants, have been circulated amongst all the Midwives of the County, with instructions to submit the same to mothers.

15. See page 52.—The County Medical Officer of Health has been instructed to take the necessary steps to obtain frequent periodical Returns with regard to Infectious Disease in the County.

16. See page 91.—The County Council has been represented at a Local Government Board Inquiry, held with regard to the application of the Urban District Council of Cheshunt for an Order enabling them to exercise compulsory powers to obtain land for the purposes of a sewage farm.

17. See page 125.—Under the directions of the County Council, the Medical Officer of Health has obtained information from the Clerks to the various District Councils in their County as to the Byelaws in force within their respective districts.

SANITARY AUTHORITIES IN HERTFORDSHIRE.

SUPERVISING AUTHORITY:

THE HERTFORDSHIRE COUNTY COUNCIL ACTING THROUGH ITS EXECUTIVE :

THE DISTRICT AND PARISH COUNCILS COMMITTEE.

There is no limit to the number of this Committee.

It is charged with considering and reporting to the County Council on all its duties concerning the public health. Quorum, six. Its constitution for 1906 is as follows :—

Baker, H. W. Clinton.
*Barnard, E. B., M.P.
Barnard, John.
*Benskin, J. C.
*Boyes, W. Osborne, LL.D.
Burchell-Herne, Rev. H. F. H.
Clarendon, The Right Hon. The Earl of, G.C.B., G.C.V.O.
Craufurd, H. R. G.
Evans, Sir John, K.C.B.
Evans, Lewis.
Gilling, J. F.
*Hine, N. J.
Horn, W. J.
Longman, A. H.
Marchand, I. H. A.
Marnham, A.
Matkin, A. G.
Mead, John.
†*Pank, John L. (Chairman).
Pearce, Joseph.
Pearson, E. J.
Porter, F. C.
Reynolds, J.
Rutherford, D. C.
Slade, Horace.
Symons, J. S.
*Toulmin, H. J.
Whately, G.L.
*Woolrych, W. R.

Those marked (*) are members of the Sub-Committee as to County Medical Officer of Health's Report.

† Representative on Committee of Selection.

LOCAL AUTHORITIES:

	Urban District Councils.	*Clerks.*
1.	BALDOCK	C. J. Veasey.
2.	BARNET	H. W. Poole.
3.	BERKHAMPSTEAD	T. Penny.
4.	BISHOP'S STORTFORD	Thomas Swatheridge.
5.	CHESHUNT	A. C. Lee.
6.	EAST BARNET VALLEY.. ..	G. D. Byfield.
7.	HARPENDEN	C. S. Tuckey.
8.	HEMEL HEMPSTEAD BOROUGH	L. Smeathman.
9.	HERTFORD BOROUGH	T. J. Sworder.
10.	HITCHIN	W. O. Times.
11.	HODDESDON	P. R. Longmore.
12.	RICKMANSWORTH	H. Lomas.
13.	ROYSTON	H. F. J. Banham.
14.	ST. ALBANS CORPORATION ..	A. H. Debenham.
15.	SAWBRIDGEWORTH	W. Morris.
16.	STEVENAGE	W. O. Times.
17.	TRING	A. W. Vaisey.
18.	WARE	G. H. Gisby.
19.	WATFORD	H. M. Turner.

	Rural District Councils.	*Clerks.*
1.	ASHWELL	A. Sharpe.
2.	BARNET	G. D. Byfield.
3.	BERKHAMPSTEAD	A. W. Vaisey.
4.	BUNTINGFORD	J. Chalmers-Hunt.
5.	HADHAM	Alfred G. Gwynn.
6.	HATFIELD	J. B. Dunham.
7.	HEMEL HEMPSTEAD	L. Smeathman.
8.	HERTFORD	T. J. Sworder.
9.	HITCHIN	A. E. Passingham.
10.	ST. ALBANS	R. W. Brabant.
11.	WARE	G. H. Gisby.
12.	WATFORD	H. M. Turner.
13.	WELWYN	T. J. Sworder.

For Financial Aspect of Districts, see Table 41, *p.* 127.

DISTRICT MEDICAL OFFICERS OF HEALTH.

Names.	Districts.
Annington, Bushell, M.D., M.A.	... Royston Urban and Ashwell Rural.
Clark, Walter F., D.P.H. ...	... Cheshunt Urban.
Collins, Ethelbert	... Sawbridgeworth Urban.
Day, F. W. Langston	... Baldock Urban, Hitchin Urban and Rural.
Drage, Lovell, M.A., M.D. (Oxon)	... Hatfield Rural.
Tarbet, Peter R.	... Stevenage Urban.
Dunn, Robert Ayton, M.D., D.Hy.	... East Herts and Essex Combined District, viz., Bishop's Stortford, Hertford, Hoddesdon, and Ware Urban, and Buntingford, Hadham, Hertford, Ware, and Stansted (Essex) Rural.
Fraser, Hugh, M.B., C.M. ..	... Harpenden Urban.
Gruggen, William, D.P.H. ...	... Middlesex and (South) Herts Combined District, viz., Barnet, Berkhampstead, Hemel Hempstead, and Tring Urban, and Barnet, Berkhampstead, Hemel Hempstead, Watford, Welwyn, and South Mimms (Middlesex) Rural.
King, Arthur, M.B., C.M., D.P.H.	... Watford Urban.
May, Henry E., M.B., B.C. ...	... St. Albans Rural
Morison, John, M.D., D.P.H. ..	... St. Albans Urban.
Roughton, Walter, F.R.C.S., D.P.H.	East Barnet Valley Urban.
Sharman, Mark, M.B., C.M., D.P.H.	... Rickmansworth Urban.

DATES OF RECEIPT OF ANNUAL REPORTS.

DISTRICT.	DATE. 1906.
East Barnet Valley Urban	Feb. 17
St. Albans Rural	,, 24
Cheshunt Urban	,, 27
East Herts and Essex Combined (9 Districts)	Mar. 1
Sawbridgeworth Urban	,, 2
Stevenage Urban..	,, 2
St. Albans City	,, 5
Hatfield Rural	,, 6
Baldock Urban	,, 9
Harpenden Urban	,, 13
Hitchin Urban	Apr. 2
Hitchin Rural	,, 2
Watford Urban	,, 2
Ashwell Rural	,, 12
Royston Urban	,, 12
Rickmansworth Urban	,, 18
Middlesex and (South) Herts Combined (10 Districts)	,, 18

Extracts from Instructions issued by the Local Government Board following on their Order of March, 1891.

"Every Medical Officer of Health . . . . is required to make an annual report."

"A copy of it is to be sent to the Local Government Board by the Medical Officer of Health."

"At the same time . . . . he must transmit a copy of such report to the County Council."

"The Medical Officer of Health ought not, in general, to have any difficulty in doing this within a month or six weeks; but if from any special circumstance the report cannot be completed within six weeks, it should be understood that the delay must not be indefinite, and that the report, complete or incomplete, should be in the hands of the Sanitary Authority within, at most, three months from the end of the year."

"The report should be chiefly concerned with the conditions affecting health in the district, and with the means for improving these conditions. . . . . The account (directed by Section 14) of the sanitary state of the district generally at the end of the year should, while marking the point that has been reached . . . . indicate directions for further consideration and action . . . ."

"Of these inspections, of the judgment he has formed thereon . . . of the advice he has in consequence given to the Sanitary Authority, and the action taken by the Authority thereon, the annual report should contain a full account."

THE PUBLIC HEALTH OF THE COUNTY.

1905.

TABLE I.—STATISTICAL SUMMARY

YEAR.	Population estimated to middle of each year, except 1901, for which Census returns are given.	Births.		Deaths under one year of age.	
		Number.	Rate.*	Number.	Rate per 1000 Births registered.
1	2	3	4	5	6
Urban.					
1899	154,052	3849	24·9	504	130·8
1900	157,026	3834	24·4	456	118·9
1901	154,888	4008	25·9	433	108
1902	159,774	3879	24·3	368	94·9
1903	162,439	4095	25·2	342	83·5
1904	166,165	4087	24·6	445	108·9
Averages for six years	159,057	3959	24·9	425	107·3
1905	170,488	4134	24·2	371	89·7
Rural.					
1899	103,859	2316	22·3	139	60
1900	105,434	2220	21	224	100·9
1901	104,923	2281	21·7	218	95·6
1902	103,901	2265	21·8	203	89·6
1903	104,430	2367	22·6	200	84 5
1904	104,862	2375	22·6	241	101·5
Averages for six years	104,568	2304	22	204	88·5
1905	104,826	2279	21·3	193	84·7

* Rates calculated per 1000 of estimated population.

The following table gives a summary of statistics as to the chief factors in an estimate of the public health, respectively in the 19 Urban and in the 13 Rural Districts for the last seven years.

The chief statistics concerning the separate health of the 32 Districts are printed in series on a flyleaf at the end of the Report.

concerning *Urban* and *Rural* Districts.

Deaths at all ages, registered in the County.		Deaths in Public Institutions.	Deaths of Non-residents registered in the County.	Deaths of Residents registered beyond the County.	Deaths at all ages. Nett.†		YEAR.
Number.	Rate.*				Number.	Rate.*	
7	8	9	10	11	12	13	
							Urban.
2257	14·6	...	...	...	...	...	1899
2353	15	408	275	45	2123	13·5	1900
2184	14·1	404	226	75	2033	13·3	1901
2172	13·6	394	219	89	2042	12·8	1902
1993	12·3	387	208	97	1882	11·6	1903
2264	13·6	421	225	79	2118	12·7	1904
2204	13·8	403	231	77	2040	12·8	Aver. for six years.
2123	12·4	396	229	104	1994	11·7	1905
							Rural.
1313	12·6	...	...	...	...	...	1899
1299	12·3	416	363	76	1012	9·6	1900
1350	12·9	260	215	75	1210	11·5	1901
1349	13	227	186	105	1268	12·2	1902
1288	12·3	239	202	111	1197	11·5	1903
1387	13·2	245	216	105	1276	12·2	1904
1331	12·7	277	236	94	1193	11·4	Aver. for six years.
1307	12·5	231	201	119	1225	11·7	1905

* Rates calculated per 1000 of estimated population.

† Column 12 is the sum of columns 7 and 11, less column 10, and represents deaths of all inhabitants of the County, wherever occurring.

POPULATION AND ACREAGE.

(For each District, see flyleaf at end.)

TABLE 2.—*POPULATION AND ACREAGE.*

	Acreage (exclusive of water).	Population.		
		Census 1891.	Census 1901.*	Estimate 1905.
Urban Districts ...	46,714	125,684	155,150	170,488
Rural Districts ...	356,142	100,903	103,273	104,826
County	402,856†	226,587	258,423	275,314
England and Wales	*37,326,795*	*29,002,525*	*32,527,843*	*34,152,977*

* Report of 1901 Census, County of Hertford; Eyre & Spottiswoode, 1*s.* 1*d.*

† In addition to this the County contains 1,662 acres covered by water, giving a gross acreage of 404,518, including water.

TABLE 3.—PERCENTAGE INCREASE IN POPULATION.

	1891–1901, by Census.	1904–5, by Estimate.
Urban Districts	+23·4	+1·55
Rural Districts	+2·3	— ·03
County	+14·1	+1·55
England and Wales	*+12·2*	*+1·14*

These estimated populations for 1905 are arrived at by various methods. That of the Registrar-General is, by comparison of the Census-returns for April 1st, 1891 and 1901, to determine the rate of increase during that decade, and to suppose the same rate of increase to have continued for $4\frac{1}{4}$ years to the middle of 1905. But the diminution of population in Rural Districts must be due not only to a diminishing birth-rate, but also and principally to emigration from the county; for deaths, although to a less extent than formerly, are still always

fewer than births. In a county which is mainly rural and easy of access to London there has for long been a growing tendency on the part of the working population to emigrate to London. Now, more especially with the growth of motor-car traffic, the development of light railways, the building of the new main line of the Great Northern Railway through Enfield and Hertford to Stevenage, the improvement in the local service of existing lines, as for instance on the Great Central and Metropolitan line through Rickmansworth and Chorleywood to Aylesbury since the transference of the Great Central through-traffic to their newly opened line through Bucks, the demolition of unhealthy areas and improvement of thoroughfares in London, and the increasing inclination in public opinion towards a country or suburban life, there will probably be a corresponding tendency, at least on behalf of the residential population, in the opposite direction. The rate of increase, therefore, of the present decade will be different to that between 1891 and 1901; and until the next census is taken in 1911 we have no fixed basis for our statistics. It will be noticed, for instance, that the change of population estimated for our Rural Districts in 1905 shows a decrease. Is this diminution real? If so, we must face all the problems of an increasing depopulation. If it is not real we do not know what problems we may have to face. For the population is the basis on which we calculate our statistics of health and disease; and these statistics, wisely interpreted and reasonably considered with a due sense of their limitations, form the audited assets of our health, on which all measures for its improvement must be based. Fifty deaths from any particular cause this year against 49 last may be unimportant if the population be increasing, but of great importance if the population be unchanged. For statistical statements, therefore, to be of value, a five-yearly instead of a ten-yearly census is urgently required.

As to the question of migration, the principal source of error, it must be noted that, while through lack of employment at Government and private works, Cheshunt shows some falling off, the population of Watford has risen in four years from 29,327 to 34,633; that several manufacturers have already removed their works from London or established new works at Watford, St. Albans, and Letchworth (e.g., Messrs. Smiths' and the Salvation Army Printing Works, Messrs. Idris, Messrs. Dent); that the "Garden City" pioneers have established their most interesting experiment between Baldock and Hitchin at Letchworth, whose population has risen from 400 to 1,600 in two years; and that it is not unlikely in the near future that these pioneering ventures may be followed by a great emigration into Hertfordshire of a working as well as a residential population.

TABLE 4.—*COUNTY BIRTH-RATE.*

(For individual Districts see flyleaf at end.)

	Rate, 1902.*	Rate, 1903.*	Rate, 1904.*	Rate, 1905.*	Number of Births, 1905.
Urban Districts ...	24·27	25·21	24·59	24·25	4,134
Rural Districts ...	21·7	21·80	22·65	21·74	2,279
County	24·2	23·30	24·11	23·29	6,413
England and Wales...	*28·6*	*28·4*	*27·9*	*27·2*	*929,457*

* Rates calculated per 1,000 of population.

With these may be compared † the birth-rate of Rural England (England and Wales less 217 towns with population of over 20,000), 26·3; London, 27·1; Glasgow, 30·1; Belfast, 31·9; 76 great towns (with populations of over 50,000), 28·2; certain colonial and foreign cities, from Buenos Ayres, 35·1; Munich, 30·3; and St. Petersburg, 29·3, down to Toronto, 22·0; Paris, 19·4; and Rio de Janeiro, 17·4.

Table 1 shows the average birth-rates of the last six years to have been 24·9 in Urban and 22·0 in Rural Districts.

The birth-rate, then, in Hertfordshire shows a general tendency to decline, and compares unfavourably with that of Rural England, 23·29, against 26·3, or with that of England and Wales, 27·2. Hertfordshire, therefore, is doing less than other counties to perpetuate the national stock.

In the Urban Districts the rate varies from 18·5 (Hitchin) to 32·2 (Ware), in the Rural from 17·1 (Watford) to 28·2 (St. Albans).

Throughout England and Wales the birth-rate has for 30 years been constantly declining since it reached its zenith at 36·3 in 1876. In successive five-year periods since then it has been 35·4, 33·5, 31·4, 30·5, 29·3, and it now is 27·9.

In 1904 it was 0·7 per 1,000 less than in 1903, and the lowest on record, showing a decrease of 1·8 per 1,000 from the average of the previous ten years.

In his last Annual Report the Registrar General gives the birth-rates for 31 different countries during the last 25 years. In 1880 European Russia showed the highest rate, 48·8, followed by those for Hungary 42·8, and for New Zealand 40·8, with Germany eleventh in the list at 37·6,

† From the Registrar General's Annual Summary for 1905.

England sixteenth at 34·2, Italy seventeenth at 33·9, and Ireland, France, and Japan last at 24·7, 24·6, and 24·3. In 1904 Russia seems still to head the list, the last recorded figure being 49·0 in 1899; the Hungarian rate has sunk to 37·0; that of New Zealand from third to twenty-fifth place at 26·9; the German to 33·9; the English to twentieth place at 27·9; the Italian only to 32·6; while Ireland and France are still at the foot of the list with rates of 23·6 and 20·9; and the Japanese rate has risen with a bound to thirteenth place at 32·5.

There is no evidence of any decline in the potential fecundity of civilized man. The age at marriage (bachelors 26·9, spinsters 25·4) is slightly increased. There has been a slight reduction in the marriage-rate. Of 1,000 persons over 15 years of age living in 1870–2, 57·2 were married; in 1904, 46·5. But the one predominant cause, which is also mainly responsible for the greater age at marriage and the fewer marriages, appears to be the higher standard of living, the greater desire of all classes for the comforts and luxuries of life, and the consequent voluntary limitation of families. For every thousand of the English population, eight fewer children are born every year to satisfy the rapidly growing needs of the Empire; competition, the soul of efficiency, must slacken off in all branches of the national life, and the incentive to colonisation must gradually be lost. And while it is among the poorest classes that the death-rate every year grows markedly less, it is amongst the wealthier that the birth-rate is being most markedly curtailed. The very classes, whose success in life is a sign of useful qualities, are giving less of their stock to the next generation; the nation of the future is being largely drawn from the less desirable residue. Those interested in this grave problem should read the Report of the Royal Commission on the decline of the birth-rate in New South Wales.

One agency for the remedy of this most serious danger rests with the County Council, as the Educational Authority for Hertfordshire. The striking and steady increase in the Japanese birth-rate during the last 25 years is attributed by those who know Japan in no small degree to the cult of patriotism in the school. There is no need for teachers to enter into detailed disquisition on the sciences concerned in fatherhood and motherhood. But it is of the first importance that children should be fired with patriotic spirit and taught to live for the future welfare of their country and Empire. As they grow up, nature will teach them to apply the principle to the facts of adult life. It is highly advisable, therefore, that steps be taken for the definite encouragement of unselfishness, restraint from self-indulgence, and a patriotic public opinion in all the schools of the County.

TABLE 5.—*COUNTY DEATH-RATE.*

(For individual Districts see flyleaf at end.)

	Rate,* 1902.	Rate,* 1903.	Rate,* 1904.	Rate,* 1905.	Number of Deaths, 1905.
Urban Districts ...	12·79	11·58	12·75	11·69	1,994
Rural Districts	12·20	11·46	12·17	11·69	1,225
County	12·55	11·54	12·66	11·69	3,219
England and Wales...	*16·2*	*15·4*	*16·2*	*15·2*	*519,939*

* These and all other rates in this report, except where otherwise stated, are calculated per 1,000 of estimated population in 1905.

The deaths here given for 1905 are all those of Hertfordshire residents, whether registered within or outside the County. Deaths of non-residents occurring in the Leavesden and other Asylums, the Workhouses, or elsewhere in the County are not included.

In the Urban Districts the rate varied from 8·7 (East Barnet Valley) to 18·3 (Baldock); in the Rural from 8·7 (Watford) and 9·0 (Barnet) to 14·4 (Ashwell and Hadham) and 20·1 (Welwyn). Watford, our biggest town, has a low rate of 10·7.

The total death-rate for Hertfordshire in 1905 is considerably lower than that in 1904, although not quite so low as that for 1903. This variation is reflected in the figures for Infant-mortality; see p. 26. The total number of deaths is 3,219—175 less than in 1904—the chief causes in the reduction being Measles 47 to 17, Diarrhœa 163 to 61, Non-pulmonary tuberculous diseases 108 to 78, Bronchitis 302 to 264, and Pneumonia 171 to 149. The very great diminution in deaths from Diarrhœa and from most respiratory diseases is largely due to climatic conditions, the former to a cool and rather rainy summer, the latter to a mild winter and spring.

The death-rate for the county in 1898 was 14·0, and in subsequent years 13·8, 13·9, 12·5, 12·55, 11·54, 12·66, 11·69. These figures may be compared with the average figures for the decades 1881–1890 and 1891–1900.

Table 6.	England and Wales.	London.*	Herts.*
1881–1890. All.	19·08	20·31	16·89
1891–1900. All.	18·20	19·2	15·6
„ males	19·32	21·82	15·03
„ females	17·14	18·49	13·16

* These are death-rates in standard populations, i.e. "corrected death-rates," in the case of the figures for the two sexes.

The death-rate for Rural England was ... ... 14·9
„ for 141 towns of 20,000 to 50,000 inhabitants ... ... 14·4
„ for 76 great towns ... ... 15·7
„ for London ... ... 15·8
„ for Glasgow ... ... 17·9
„ for Dublin ... ... 21·3

A comparison of foreign and colonial death-rates is also of interest. The highest recorded were those for Madras 58·7, Bombay 48·6, Calcutta 34·4, with Trieste 28·1, St. Petersburg 25·0, Cape Town 21·5, Rome 20·6, New York 18·3, Paris 17·4, and Berlin 17·2; while the lowest were those for Brussels 14·5, Amsterdam 13·8, and Sydney 11·0.

The death-rate is a real measure of sanitary and hygienic efficiency. Owing in part to surgical and medical progress—due mainly to the discovery of antiseptics, of chloroform, of the whole science of bacteriology, including the effects of vaccine and diphtheria antitoxin—owing also, and probably still more, to the general improvement in sanitation and in healthy habit of life, the death-rate in England and Wales has steadily fallen from 22·5 for the decade 1861–1870 to 15·2 in 1904.

TABLE 7.—DEATHS in

Showing the number from each cause at

CAUSES OF DEATH.	DEATHS IN ALL URBAN DISTRICTS AT SUBJOINED AGES.						
	All ages.	Under 1.	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.
1 Smallpox	...	...	...	...	...	...	...
2 Measles	9	2	7	...	...	...	...
3 Scarlet Fever... ...	3	...	1	2	...	...	...
4 Whooping Cough ...	39	26	11	2	...	...	...
5 Diphtheria and Membranous Croup ...	11	...	5	6	...	...	...
6 Croup	2	...	2	...	...	..	...
7 Enteric and other continued Fever ...	6	...	...	...	4	2	..
8 Epidemic Influenza ...	16	2	3	1	...	4	6
9 Diarrhœa	47	35	5	...	...	3	4
10 Enteritis	32	20	4	1	...	2	5
11 Puerperal Fever ...	...	...	...	...	...	...	...
12 Erysipelas	6	3	...	...	1	2	...
13 Other Septic Diseases	18	1	...	4	...	7	6
14 Phthisis	156	...	2	7	34	107	6
15 Other Tuberculous Diseases	64	13	20	11	2	18	...
16 Cancer or malignant disease	158	...	...	...	1	90	67
17 Bronchitis	155	30	17	2	...	28	78
18 Pneumonia	96	23	14	3	1	31	24
19 Pleurisy	10	...	...	...	..	8	2
20 Other Diseases of Respiratory Organs	25	5	4	...	1	6	9
21 Alcoholism and Cirrhosis of Liver ...	35	...	...	...	...	32	3
22 Venereal Diseases ...	4	3	...	...	...	1	...
23 Premature Birth ...	59	58	1	...	...	...	...
24 Diseases and Accidents of Parturition ...	13	...	...	...	5	8	...
25 Heart Diseases ...	229	4	5	9	5	93	113
26 Accidents	39	5	7	4	5	13	5
27 Suicides	11	...	...	...	1	9	1
28 All other causes ...	751	136	26	20	27	186	356
All causes ...	1994	366	134	72	87	650	685

divers age-periods and in different districts.

Deaths in each District (at all Ages).																		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
Baldock.	Barnet.	Berkhamp-stead.	Bishop's Stortford.	Cheshunt.	E. Barnet Valley.	Harpen-den.	Hemel Hempstead	Hertford Borough.	Hitchin.	Hoddes-don.	Rickmans-worth.	Royston.	St. Albans City.	Sawbridge-worth.	Stevenage.	Tring.	Ware.	Watford.	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
2	1	...	1	1	...	...	...	...	...	2	...	...	2	...	...	...	...	...	2
...	..	...	...	...	...	...	1	...	...	...	2	...	...	...	...	...	...	...	3
...	5	1	4	...	1	1	...	...	1	3	1	...	...	...	...	...	...	22	4
...	1	...	...	1	1	...	1	...	1	...	1	...	1	...	...	...	...	4	5
..	...	...	...	...	..	...	...	...	..	...	...	..	...	...	1	...	..	1	6
...	...	...	...	1	...	...	...	...	1	...	1	...	...	1	...	1	...	1	7
...	2	...	...	1	...	1	3	1	1	1	1	...	...	...	...	1	...	4	8
3	2	2	...	4	1	2	1	3	2	2	...	...	3	...	...	2	3	17	9
...	3	2	...	4	1	1	2	5	1	2	...	...	...	1	...	1	...	9	10
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11
...	...	1	...	1	1	...	1	1	...	1	...	...	...	...	...	...	...	...	12
...	...	...	2	...	...	1	...	6	1	1	1	2	1	...	...	...	3	...	13
2	9	7	1	8	7	7	12	6	8	8	10	3	19	2	4	3	8	32	14
...	3	2	...	2	9	2	4	3	6	1	3	...	12	1	...	1	4	11	15
1	2	2	6	12	7	3	14	9	8	7	6	6	30	5	7	7	3	23	16
2	5	12	6	10	5	5	8	15	15	5	6	4	19	3	2	6	7	20	17
1	4	1	2	10	2	...	4	7	9	8	2	2	11	1	2	5	7	18	18
...	2	1	...	...	...	...	...	2	2	1	...	...	...	...	...	...	...	2	19
...	3	3	...	...	1	2	6	5	...	...	...	...	1	...	...	2	1	1	20
2	2	...	1	3	3	2	1	4	2	...	3	...	2	1	1	1	1	6	21
...	...	...	...	...	...	...	...	...	..	...	2	...	1	...	...	1	...	...	22
...	1	2	4	7	2	...	11	1	5	1	3	...	7	...	2	1	2	10	23
...	...	...	1	2	...	2	...	1	2	. .	...	1	2	1	...	...	...	1	24
7	17	4	14	15	7	10	24	9	13	5	2	1	37	4	9	7	2	42	25
...	2	1	3	4	4	1	6	4	1	...	3	1	3	1	1	...	...	4	26
...	2	...	2	1	...	...	1	2	1	..	...	..	...	...	...	...	...	2	27
16	43	35	41	61	47	20	58	54	45	23	24	19	55	10	8	24	25	143	28
36	109	76	88	148	99	60	158	138	125	71	71	39	206	31	37	63	66	373	

TABLE 8.—DEATHS in

Showing the number from each cause at

CAUSES OF DEATH.	DEATHS IN ALL RURAL DISTRICTS AT SUBJOINED AGES.						
	All Ages.	Under 1	1 and under 5.	5 and under 15.	15 and under 25.	25 and under 65.	65 and upwards.
1 Smallpox	1	...	...	...	...	1	...
2 Measles	8	1	6	1	...	...	...
3 Scarlet Fever	2	...	1	1	...	...	...
4 Whooping Cough	13	10	3	...	...	...	...
5 Diphtheria and Membranous Croup...	10	1	5	4	...	...	...
6 Croup	2	...	1	...	...	1	...
7 Enteric Fever	2	...	...	...	...	2	...
8 Other continued Fever	...	...	...	...	...	...	...
9 Epidemic Influenza	17	1	1	1	2	7	5
10 Diarrhœa	14	11	...	...	...	1	2
11 Enteritis	12	8	1	...	...	...	3
12 Puerperal Fever	2	...	...	..	...	2	...
13 Erysipelas	4	2	...	...	...	1	1
14 Other Septic Diseases	10	...	...	1	3	2	4
15 Phthisis	86	...	3	1	17	60	5
16 Other Tuberculous Diseases	14	4	3	3	...	3	1
17 Cancer or malignant disease	92	...	...	1	1	44	46
18 Bronchitis	109	24	7	...	...	13	65
19 Pneumonia	53	6	8	2	1	22	14
20 Pleurisy	2	...	...	...	...	...	2
21 Other Diseases of Respiratory Organs	17	1	4	...	...	6	6
22 Alcoholism and Cirrhosis of Liver ...	14	...	...	...	...	13	1
23 Venereal Diseases	3	3	...	...	...	...	...
24 Premature Birth	61	61	...	...	...	...	...
25 Diseases and Accidents of Parturition	5	...	...	...	...	5	..
26 Heart Diseases	141	2	1	2	7	49	80
27 Accidents	44	4	11	2	3	17	7
28 Suicides	8	...	...	...	...	6	2
29 All other causes	479	57	12	16	15	105	274
All causes...	1225	196	67	35	49	360	518

divers age-periods and in different districts.

Deaths in each District (at all Ages).													
1	2	3	4	5	6	7	8	9	10	11	12	13	
Ashwell.	Barnet.	Berkhamp-stead.	Buntingford.	Hadham.	Hatfield.	Hemel Hempstead.	Hertford.	Hitchin.	St. Albans.	Ware.	Watford.	Welwyn.	
...	...	...	...	...	...	...	...	...	...	I	...	...	I
...	...	...	...	...	4	...	...	...	I	I	...	2	2
I	...	...	...	I	...	...	...	...	...	...	...	...	3
...	I	...	I	4	...	...	...	3	3	I	...	...	4
...	I	...	...	2	I	...	...	...	2	2	2	...	5
...	...	...	..	...	...	...	..	...	...	I	I	...	6
...	...	...	...	...	...	I	...	...	I	...	...	...	7
...	...	...	...	...	...	...	...	...	..	...	...	...	8
...	2	...	I	...	...	...	4	2	...	3	5	..	9
...	...	I	...	2	I	...	2	2	...	2	2	2	10
...	I	2	I	2	I	...	I	...	I	2	I	...	11
...	...	...	...	...	...	...	I	...	...	...	I	..	12
...	...	...	...	I	I	I	...	...	..	I	...	...	13
...	...	...	4	I	...	...	...	...	...	5	...	...	14
7	5	6	4	4	9	5	7	4	14	9	8	4	15
2	3	I	...	I	I	...	...	I	2	2	I	...	16
5	...	I	6	6	8	4	7	7	12	11	21	4	17
10	3	5	5	7	3	7	6	13	18	11	17	4	18
I	...	I	3	5	6	5	I	7	11	5	8	...	19
...	...	...	...	...	...	I	...	...	...	...	I	...	20
...	...	I	I	I	...	..	2	...	...	2	8	2	21
I	...	I	...	I	I	I	...	3	2	I	3	...	22
...	...	I	I	...	...	...	...	...	...	I	...	...	23
5	I	9	...	...	I	9	2	5	15	4	9	I	24
I	...	...	...	...	...	...	I	2	...	...	I	..	25
10	3	9	5	10	7	12	5	20	32	13	14	I	26
I	4	I	I	I	...	3	4	5	7	7	6	4	27
...	...	...	...	...	I	I	...	4	I	...	I	...	28
13	17	24	29	27	44	26	48	66	63	36	64	22	29
57	41	63	62	76	89	76	91	144	185	121	174	46	

CAUSES OF DEATH.

The actual number of deaths recorded from each cause in the several districts is given in Tables 7 and 8.

The most important causes of death from a hygienic point of view are represented in the infant-mortality and in the death-rates from epidemic diseases, from diarrhœa, phthisis, and cancer.

TABLE 9.—*INFANT MORTALITY.*

(*Ratio of deaths under one year of age per thousand births registered.*)

(For individual Districts see flyleaf at end.)	Rate, 1902.	Rate, 1903.	Rate, 1904.	Rate, 1905.	Number, 1905.
Urban Districts ...	94·87	83·52	108·88	89·7	4,134
Rural Districts ...	89·62	84·40	101·47	84·7	2,279
County	92·93	83·87	106·16	87·9	6,413
England and Wales	*133*	*132*	*146*	*128*	119,293

In the Urban Districts this figure varied from 34 (Stevenage) and 36 (Harpenden) to 120 (Baldock) and 129 (Hoddesdon), in the Rural from 44 (Hatfield) to 123 (Ashwell) and 155 (Welwyn). Watford, our biggest town, has a low rate of 84. It will be noticed on referring to the Table of Chief Statistics at the end of the Report that Baldock and Hoddesdon have the highest and Sawbridgeworth the lowest average figures for the last 6 years in Urban Districts, while in the Rural, Hemel Hempstead, Berkhampstead, and Ashwell have a conspicuously high, and Ware, Buntingford, and Hadham comparatively low average rates. The District Councils concerned should take these figures seriously to heart.

The infant-mortality for Hertfordshire in 1898 and following years was: 111·1, 120·5, 112·3, 103·5, 92·9, 83·9, 106·2, and 87·9.

The infant mortality rate in Hertfordshire compares favourably with the corresponding figure for Rural England in 1905: 113

For 141 towns of 20,000 to 50,000 population ... 132

For 76 great towns... 140

For London... 129

With these figures may be compared the following average rates:—

TABLE 10.	England and Wales.	London.	Herts.
1881–1890, both sexes ...	142	152	108
1891–1900 „ „ ...	154	160	110
„ „ males * ...	168	173	124
„ „ females * ...	138	146	95

* Kindly supplied by Dr. Tatham, of the General Register Office, in advance of official publication.

In 1905, then, the infant-mortality in Hertfordshire reached its lowest figure; it is well below 100, and it is hoped it may stay there. In contrast to 1904, there was little diarrhœa and few cases of respiratory diseases, owing no doubt to a fairly cool and rainy summer and a mild winter.

But the common rate of infant-mortality is most unsatisfactory. In England and Wales, except for two good years, 1902–3, the rate is as high now as in 1850, the highest rate being that of 163 so recently as in 1899. Compared with the 54 other counties, Hertfordshire had the lowest figure in 1903, and the lowest but eleven in 1904, when its death-rate of children under 5 was the lowest of all but 4 counties. This must not blind us to the serious and largely preventible waste of life here revealed.

To assist in analysing the causes of this mortality the following Tables 11 and 12 have been prepared this year for the first time, showing the cause of infant-deaths at different stages of the first year of their lives respectively in the Urban and Rural sections of the county.

It will be seen that in the first week of life premature birth and debility are responsible for 57 out of 84 infant-deaths in the Urban, 52 out of 63 in the Rural Districts; that diarrhœa, even in a year so unfavourable to that disease, caused 45, whooping-cough 36, and bronchitis 54 deaths; while tuberculosis was the cause of 12, convulsions of 41, and other preventible causes, such as overlaying, most of the remaining out of 368 infant-deaths. Incidentally it may be noticed that over one-third of all infant-deaths occurred in the first month; and that only 21 deaths in the first year were uncertified.

The subsequent table 13 gives with certain other figures the number of infant-deaths at each period of the first year of life in the different Districts, from which some idea of the care of infant-life in each District may be gathered.

TABLE II.—CAUSES OF INFANT MORTALITY IN URBAN DISTRICTS.

Population, 170,488. Deaths from all Causes at all Ages, 1,994.

CAUSE OF DEATH.	Under 1 Week.	1–2 Weeks.	2–3 Weeks.	3–4 Weeks.	Total under 1 Month.	1–2 Months.	2–3 Months.	3–4 Months.	4–5 Months.	5–6 Months.	6–7 Months.	7–8 Months.	8–9 Months.	9–10 Months.	10–11 Months.	11–12 Months.	Total Deaths under one year.
Common Infectious Diseases :																	
Smallpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chicken-pox	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Measles	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1	...	2
Scarlet Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria : Croup ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Whooping Cough	...	...	...	...	...	2	3	6	1	3	2	3	1	2	2	1	26
Diarrhœal Diseases :																	
Diarrhœa, all forms ...	1	...	2	...	3	2	6	6	5	1	1	7	...	3	...	...	34
Enteritis (*not Tuberculous*)	...	...	...	1	1	1	4	3	...	2	...	...	1	1	1	1	15
Gastritis, Gastro-intestinal Catarrh	...	...	...	...	...	...	1	2	...	3	...	...	1	...	...	...	7
Wasting Diseases :																	
Premature Birth	42	4	6	2	54	3	1	1	...	...	...	1	...	...	...	...	60
Congenital Defects... ...	9	3	1	...	13	3	1	...	...	...	...	...	...	...	...	1	18
Injury at Birth	3	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	3
Want of Breast-milk ...	...	...	...	...	...	...	...	...	1	...	...	...	...	1	...	...	2
Atrophy, Debility, Marasmus	15	2	3	3	23	11	7	4	4	2	4	...	2	...	...	...	57
Tuberculous Diseases :																	
Tuberculous Meningitis ...	...	...	...	...	...	...	...	...	1	...	...	2	...	1	...	...	4
Tuberculous Peritonitis : Tabes Mesenterica	...	...	...	...	...	...	3	...	...	1	...	...	...	...	1	...	5
Other Tuberculous Diseases	...	...	...	...	...	...	1	...	...	...	...	...	1	1	...	...	3
Erysipelas	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	3
Syphilis	...	...	1	...	1	1	1	1	...	...	...	...	...	...	...	...	4
Rickets	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meningitis (*not Tuberculous*)	...	...	...	...	...	...	...	...	2	1	2	...	...	...	...	...	5
Convulsions	6	4	4	1	15	4	2	2	3	2	1	1	1	...	3	2	36
Bronchitis	1	...	1	1	3	7	7	3	1	2	...	2	1	2	1	2	31
Laryngitis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pneumonia	...	...	1	...	1	1	1	2	1	2	2	4	1	5	3	1	24
Suffocation, overlaying ...	1	...	...	...	1	1	1	1	...	1	...	...	...	...	...	...	5
Other Causes...	6	3	...	2	11	1	2	1	3	...	2	3	1	...	...	...	24
All Causes : Certified ...	76	16	18	10	120	36	44	31	21	18	13	21	10	15	11	8	348
Uncertified ...	8	...	1	...	9	1	1	1	1	2	1	2	...	1	1	...	20
Totals for Urban Districts ...	84	16	19	10	129	37	45	32	22	20	14	23	10	16	12	8	368

TABLE 12.—CAUSES OF INFANT MORTALITY IN RURAL DISTRICTS.

Population, 104,826. Deaths from all Causes at all Ages, 1,225.

CAUSE OF DEATH.	Under 1 Week.	1–2 Weeks.	2–3 Weeks.	3–4 Weeks.	Total under 1 Month.	1–2 Months.	2–3 Months.	3–4 Months.	4–5 Months.	5–6 Months.	6–7 Months.	7–8 Months.	8–9 Months.	9–10 Months.	10–11 Months.	11–12 Months.	Total Deaths under one Year.
Common Infectious Diseases:																	
Smallpox	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chicken-pox	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Measles	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Scarlet Fever	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Diphtheria: Croup ...	...	...	...	...	...	...	..	...	...	...	...	1	...	...	...	...	1
Whooping Cough	...	...	...	...	...	1	3	3	1	1	...	...	...	...	...	1	10
Diarrhœal Diseases:																	
Diarrhœa, all forms ...	...	...	1	...	1	3	1	2	...	2	...	1	...	...	...	1	11
Enteritis (*not Tuberculous*)	...	...	...	...	...	...	1	...	1	...	...	1	...	...	...	...	3
Gastritis, Gastro-intestinal Catarrh	...	...	...	...	...	1	1	...	...	2	1	...	...	...	1	...	6
Wasting Diseases:																	
Premature Birth	46	5	4	1	56	2	...	1	...	...	...	...	...	...	...	...	59
Congenital Defects ...	4	...	...	...	4	2	1	1	...	...	...	...	...	...	...	...	8
Injury at Birth	3	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	3
Want of Breast-milk ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Atrophy, Debility, Marasmus	6	4	2	8	20	3	1	2	3	1	...	...	...	...	...	...	30
Tuberculous Diseases:																	
Tuberculous Meningitis ...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Tuberculous Peritonitis: Tabes Mesenterica	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	1
Other Tuberculous Diseases	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	1
Erysipelas	...	...	...	...	...	1	...	...	...	1	...	...	...	...	...	...	2
Syphilis	...	1	1	...	2	...	...	...	1	...	...	...	...	...	...	...	3
Rickets	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Meningitis (*not Tuberculous*)	...	...	...	...	...	...	...	...	...	1	1	...	...	1	...	1	4
Convulsions	1	...	1	1	3	1	...	...	...	...	1	...	...	...	...	...	5
Bronchitis	1	2	...	...	3	4	2	...	3	5	1	...	3	...	...	2	23
Laryngitis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Pneumonia	...	...	...	...	...	...	1	...	1	1	1	...	2	...	1	...	7
Suffocation, overlaying ...	1	...	...	...	1	...	2	...	...	...	...	...	...	...	...	...	3
Other Causes...	1	...	...	1	2	2	...	2	2	...	2	...	2	...	...	...	12
All Causes.—Certified ...	8	...	1	...	9	1	1	1	1	2	1	2	...	1	1	...	20
Uncertified ...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	1
Totals for Rural Districts...	63	12	9	11	95	20	13	13	12	16	7	3	7	1	2	5	194
,, Urban ,, ...	84	16	19	10	129	37	45	32	22	20	14	23	10	16	12	8	368
,, County	147	28	28	21	224	57	58	45	34	36	21	26	17	17	14	13	562

County Population, 275,314. County Deaths at all Ages, 3,219.

DISTRICTS.	Population, 1905.	Deaths at all ages.	BIRTHS.		INFANT DEATHS IN FIRST FOUR WEEKS.			
			Legitimate.	Illegitimate.	1	2	3	4
Urban—								
1. Baldock	1,960	36	49	1	1	...	...	1
2. Barnet	9,162	109	227	14	3	3	...	2
3. Berkhampstead	5,401	76	111	3	1	2	2	...
4. Bishop's Stortford	7,400	88	168	9	4	2	1	2
5. Cheshunt	13,641	148	334	9	10	1	2	...
6. East Barnet Valley	11,300	99	233		5	...	...	...
7. Harpenden	5,368	60	107	2	...	...	1	...
8. Hemel Hempstead	11,989	158	296	6	9	1	1	1
9. Hertford	9,560	138	227	7	4	3	2	...
10. Hitchin	10,710	125	190	9	7	...	2	...
11. Hoddesdon	5,000	71	120	4	1	...	1	...
12. Rickmansworth	6,430	71	148	6	7	...	1	1
13. Royston	3,605	39	69	8	4	...	...	...
14. St. Albans	17,800	206	354	17	7	2	3	...
15. Sawbridgeworth	2,220	31	46	2	...	...	...	...
16. Stevenage	4,250	37	119	2	...	...	...	1
17. Tring	4,349	63	107		...	...	1	...
18. Ware	5,710	66	173	11	3	...	1	...
19. Watford	34,633	373	926	20	18	2	1	2
Rural—								
1. Ashwell	3,953	57	79	4	4	...	2	1
2. Barnet	4,535	41	108	2	2	2	...	...
3. Berkhampstead	5,984	63	129	3	9	1	1	0
4. Buntingford	4,900	62	90	6	1	...	...	...
5. Hadham	5,270	76	130	3	...	...	...	...
6. Hatfield	7,551	89	182		3	1	...	2
7. Hemel Hempstead	6,012	76	113	6	8	...	1	...
8. Hertford	7,600	91	163	8	3	2	...	1
9. Hitchin	12,290	144	232	17	7	1	...	3
10. St. Albans	13,383	185	378		15	2	2	...
11. Ware	11,100	121	215	11	1	...	3	1
12. Watford	19,964	174	342		9	2	...	2
13. Welwyn	2,284	46	58		1	1	...	1

Infant Deaths in first Twelve Months.													Rate per 1,000 births.	Districts.
1	2	3	4	5	6	7	8	9	10	11	12	Total.		
2	3	...	...	1	...	...	...	...	...	...	...	6	120	1.
8	3	2	4	...	1	...	1	1	3	...	2	25	112	2.
5	2	...	1	...	1	...	...	...	...	...	...	9	87	3.
9	1	2	1	3	...	1	2	1	...	...	...	20	113	4.
13	3	7	2	1	2	...	5	2	1	1	...	37	107·8	5.
5	2	2	1	3	2	2	...	...	1	...	...	18	77·2	6.
1	1	1	...	1	...	...	...	...	...	...	...	4	36	7.
12	1	4	...	...	2	3	1	1	...	1	...	25	82	8.
9	...	8	4	1	...	2		1	..	1	...	26	111·1	9.
9	1	2	1	2	1	...	2	1	1	...	1	21	105	10.
2	...	1	3	1	3	1	3	...	...	2	...	16	129	11.
9	3	1	...	1	...	...	...	...	2	...	2	18	116·8	12.
4	2	2	...	...	...	1	...	...	...	...	...	9	111	13.
12	3	3	2	2	1	1	1	...	...	1	1	27	72·7	14.
...	...	...	...	...	...	...	...	...	1	1	...	2	41·6	15.
1	1	...	1	...	...	...	...	...	...	...	1	4	33·7	16.
1	2	1	2	...	...	...	...	...	1	...	...	7	65	17.
4	...	2	...	...	1	...	4	1	2	...	...	14	76	18.
23	9	7	10	6	6	3	4	2	4	5	1	80	84	19.
7	1	...	1	1	...	1	...	...	...	...	...	11	123	1.
4	1	...	1	2	1	...	...	...	...	...	...	9	72	2.
11	1	1	...	...	1	1	...	...	...	...	...	15	113	3.
1	1	1	1	1	...	...	...	...	...	...	...	5	52	4.
...	4	2	...	...	...	...	...	1	...	...	...	7	52·6	5.
6	...	...	...	...	...	...	1	...	...	1	...	8	43·9	6.
9	1	...	1	...	2	...	...	...	...	...	1	14	117	7.
6	...	1	1	1	2	...	1	...	...	...	...	12	70·2	8.
11	2	2	1	1	3	2	...	...	...	...	1	23	92	9.
19	4	2	3	4	3	...	1	2	...	...	1	39	103·1	10.
5	3	1	2	1	2	1	...	1	...	1	...	17	75	11.
13	2	2	1	...	1	2	...	3	1	...	...	25	73	12.
3	...	1	1	1	1	...	...	...	...	...	2	9	155	13.

Another year it is hoped to be able to complete the column of illegitimate births. These form 40 per 1,000 births in England and Wales, having gradually declined from a proportion of 66 per 1,000 in 1858. In 1904 the proportion varied from 27 per 1,000 in Essex to 67 in Shropshire.

What, then, is the practical outcome of these figures of infant-mortality? What are the factors in the life of the people which tend to maintain the evil, and which, if amended, may tend to abolish it?

The causes have been investigated at length by the recent Inter-Departmental Committee on Physical Deterioration,* and may be grouped, either from the point of view of the sociologist or of the physician, as follows. In the former case the list will include:—

(1) Employment in factories of mothers, late in pregnancy, too soon after childbirth, and too much throughout the childhood of their family;

(2) Ignorance and carelessness of mothers;

(3) Overcrowding and defective housing;

(4) Venereal disease and alcoholism, transmitting effects through several generations;

(5) Illegitimacy;

(6) Perhaps the abuse of infant insurance.

From the medical aspect, infant-mortality appears due to:—

(1) The decrease of the custom of breast-feeding in all classes;

(2) The substitution after weaning of wrong food wrongly given;

(3) Defective arrangements for milk supply;

(4) Lack of general care of children, as to fresh air, bodily warmth, sleep, and cleanliness;

(5) Accidents, as from fire or overlaying, due to parental carelessness.

All or nearly all of these causes are obviously remediable. Public Health, Housing, and Education Acts will offer some help towards a remedy. The County Council issue cards of simple instruction "on the Care and Feeding of Infants" to all medical practitioners and midwives in the County; and copies for distribution may always be had from the District Medical Officers of Health. The demand for cards necessitated a second edition in January, 1906. It is reassuring to know that 85 per cent. of children are born healthy. Whether they remain so or not rests largely with the people themselves, guided by public opinion and private influence. To prevent this unnecessary annual sacrifice of infant lives must be an inspiring object to every public-spirited member of the community.

* Report, vol. i, p. 44; Wyman & Sons, Ltd., Fetter Lane; price 1*s.* 2*d.*

CAUSES OF DEATH.—DIARRHŒA.

This heading represents mainly deaths from infective enteritis or epidemic diarrhœa, occurring mostly in infants in the summer months, as apart from simple enteritis, cholera, or enteric fever.

TABLE 14.—DEATH-RATES FROM DIARRHŒA, 1902–5.

(For individual Districts see flyleaf at end.)	Rate, 1902.	Rate, 1903.	Rate, 1904.	Rate, 1905.	Number, 1905.
Urban Districts ...	0·16	0·16	0·64	0·27	47
Rural Districts ...	0·17	0·09	0·53	0·13	14
County	0·16	0·13	0·60	0·22	61
England and Wales	*1·26*	*0·55*	*0·86*	*0·59*	

In Hertfordshire the rate varied in Urban Districts from ·0 (Bishop's Stortford, Rickmansworth, Royston, Sawbridgeworth, Stevenage) to 1·5 (Baldock), in Rural Districts from ·0 (Ashwell, Barnet, Buntingford, Hemel Hempstead, St. Albans) to 0·9 (Welwyn). Besides the 61 deaths registered as due to diarrhœa, several probably of the 44 deaths returned as due to enteritis belong to the same epidemic.

The 1905 rates were: for England and Wales 0·59, for Rural England 0·32, for London 0·73, for 76 great towns 0·83, for 141 smaller towns 0·57.

The number of deaths from diarrhœa in Hertfordshire in 1898 and following years has been 217, 191, 148, 113, 43, 36, 163, and 61.

With these may be compared the figures for 1881–1900, from the Registrar-General's Reports.

TABLE 15.—DEATH-RATES FROM DIARRHŒA, 1881–1900.

	England and Wales.	London.	Herts.
1881–1891, both sexes ...	0·67	0·77	0·44
1891–1900 „ „ ...	0·73	0·78	0·47
„ „ males	0·77	0·85	0·50
„ „ females	0·66	0·68	0·40

The disease is not notifiable; and the extent of its prevalence, therefore, can only be measured by the death record.

Diarrhœa seldom accounts for less than one-third of deaths from the seven chief epidemic diseases, and over a considerable area or space of time is a fairly good test of sanitary condition. Serious diarrhœa, as an epidemic disease, mostly attacks children in the first few years of life, and diarrhœal diseases are the most destructive of all the ailments incidental to child-life. On referring to Table 11, p. 28, it will be seen that nearly one-sixth of the Urban infant-mortality in 1905 was due to these causes, acting in the third and later months of infancy. This supports the experience that it is due in most cases to the drinking of tainted water or milk; it may also be caused by tainted food, and possibly by tainted air. Overcrowding, impure water, unsound sewerage and drainage, imperfect control of food-supplies, uncleanliness, carelessness, and neglect on the part of the mothers are therefore amongst the chief indirect causes of this form of death. At the same time, the cold and wet summers of 1902–3, and the moderately cool and rainy summer of 1905 diminished the prevalence and severity of epidemic diarrhœa. It has been shown that, other things being equal, the mortality from diarrhœa is least in towns with (1) water-borne sewage, (2) good scavenging arrangements, (3) impervious soils, (4) steep gradients, (5) well-paved and well-washed streets and yards and well-flushed sewers; and (6) that it is directly proportional to the temperature and (7) inversely proportional to the rainfall. The germ of the disease appears to flourish in the soil, but only when the earth-thermometer shows a temperature of 54° F.; and the rise of an epidemic does not occur till a fortnight or more after the rise of the earth-thermometer.

From this and other facts it is argued by some that the infection may be carried from flies. The extraordinary prevalence of the disease in hot weather, and the accuracy with which the death-rate from diarrhœa corresponds in its variations from week to week at some interval with those of the 4 foot earth-thermometer, show the need for special care to be taken by all responsible persons and by all mothers in the summer and autumn. It is noticeable that the rainfall in June was heavy—3·25, 3·83, 3·95 inches in three different parts of the County, 13 or 14 days being rainy; and June is pre-eminently the month for the breeding of flies. On the other hand, the rainfall for the whole year was below the average; and the mean annual temperature was 49·41°, slightly lower than in 1904, but definitely above the average; both of which facts would commonly be supposed to favour the

prevalence of diarrhœa. On the fly-theory these facts were discounted by the wet June.

The essential principle in the prevention of the disease is to realise that it is due to a microbe, carried presumably either by dust or insects; that any possible breeding-grounds of insects must be removed, all food and drink, whether in shop, larder, or on the table, protected from insects, and the microbe either killed or washed away. This is effected by scrupulous domestic and public sanitation; by issuing and placarding public notices on the subject in the month of May, and by doing all that is possible to induce mothers of the poorer classes to cleanse their feeding-bottles, boil their milk before use—unless they can be sure of its being fresh and pure—and to take sundry similar precautions. Such measures have been adopted in several large towns; and the Hertfordshire County Council issue cards of instruction to mothers, to which reference has already been made on p. 32.

CAUSES OF DEATH.—PHTHISIS.

Out of 3,219 deaths in the County, 242 were caused by Pulmonary Tuberculosis, popularly known as Phthisis or Consumption, the most prevalent and for obvious reasons by far the most infectious form of Tuberculosis, owing to infection of the breath.

TABLE 16.—DEATH-RATES FROM PHTHISIS, 1902–5.

(For individual Districts see flyleaf at end.)	Rate, 1902.	Rate, 1903.	Rate, 1904.	Rate, 1905.	Number, 1905.
Urban Districts	0·91	0·94	0·90	0·92	156
Rural Districts ...	0·86	0·89	0·85	0·82	86
County	0·89	0·92	0·89	0·88	242
England & Wales	*1·23*	*1·20*	*1·24*	Not yet	computed.

In Urban Districts the rate for 1905 varied from ·1 (Bishop's Stortford) to 1·6 (Hoddesdon and Rickmansworth); in Rural Districts from ·3 (Hitchin) to 1·8 (Ashwell and Welwyn). This latter high figure is exceptional for these two districts, and much above the average; the other figures, high and low, are not exceptional, and the attention of the Councils of Districts having a comparatively high rate should be drawn to the fact, in the hope that greater attention to housing accommodation and other appropriate measures may further reduce the number of deaths from this preventible disease.

In 1898 and subsequent years the number of deaths from Pulmonary Tuberculosis in our county has been 177, 210, 207, 213, 236, 246, 253, and last year 242. Throughout England and Wales, however, the death-rate from phthisis has steadily diminished from 2·45 in 1866–1870, 2·04 in 1876–1880, 1·64 in 1886–1890, and 1·30 in 1898–1902, to 1·24 in 1904. For Rural Counties of England and Wales the average rate for 1898–1902 was 1·14, that for 1903 1·11.

The following figures from the Registrar-General's reports may be of use for purposes of comparison. The constantly higher rate amongst males than amongst females may be partly due to the greater proportion of men working in confined rooms. The London death-rate from phthisis in 1905 was 1·42.

TABLE 17.—DEATH-RATES FROM PHTHISIS, 1881–1900.

	England and Wales.	London.	Herts.
1881–1890, both sexes ...	1·72	2·08	1·43
1891–1900 „ „ ...	1·39	1·79	1·22
„ „ males ...	1·58	2·28	1·42
„ „ females ...	1·21	1·35	1·03

For the last 10 years the only countries with a lower rate than our own are Italy at 1·24, and Ceylon and the Australian Colonies, all of which with one exception have a rate under 1·0. Ireland has a rate of 2·13, Germany of 2·07, Japan of 1·41, while Austria has one of 3·47.

Phthisis, consumption, or tuberculosis of the lungs causes one-twelfth of all the deaths in the country, mostly in the prime of life; it is the most commonly recognised of all tuberculous diseases, is due to definite known causes, and can be prevented, and, when acquired, can in the early stages be cured, by methods recently made widely known throughout the world. It is therefore worthy of separate consideration.

The active agent in the disease is the specific bacillus of tubercle. The usual cause is the exhalation by phthisical persons at every cough of a cloud of spray, which has been shown (Hillier) to contain in the most minute drops the tubercle bacillus; the drying of the expectoration of phthisical persons, containing the living bacteria; their distribution amongst the dust of houses and streets, and their inhalation by other individuals.

With regard to every communicable disease, and more especially phthisis, our chief efforts should be directed towards limiting the opportunities for infection, and diminishing the susceptibility of the individual to attack, improving the sanitation and surroundings, especially of the poor, and strengthening their constitution. It is morally and economically wrong to allow preventible insanitary conditions to continue, and trust to combating disease when developed. In its early stages the disease can be cured by open-air habits combined with healthy living and good feeding; while the chief sanitary measures for its prevention aim at discouraging expectoration in public streets and vehicles; the diffusion of knowledge through medical men and through leaflets and the Press, so that phthisical people may avoid any spread of the disease through carelessness; the isolation or education of patients in sanatoria; the

removal of domestic and trade-conditions favouring dust and dirt; the disinfection of infected houses; bacteriological diagnosis for suspected cases in a public laboratory and at the public cost; and notification of the disease to the sanitary authority. Much valuable work has been done in some of the large towns by properly trained health-visitors, acting under the Medical Officer of Health. On receipt of a voluntary notification the latter visits the patient's house and investigates his conditions of life and work with the object of removing such as are likely to favour the continuance or spread of the disease; a handbill of instructions and advice is left; a gratuitous supply of disinfectant is provided, if advisable; cleansing and disinfection of the premises are enforced where necessary; and periodic visits are made to see if the precautions advised are being carried out. A similar result is attained in Berlin, Paris, Lyons, and elsewhere abroad by anti-tuberculous dispensaries, first proposed and inaugurated by M. Calmette at Lille. In Hertfordshire the only attempt at any of these measures appears to be the issue of a pamphlet for distribution through the Sanitary Inspector at St. Albans.

As to notification, it appears that until the Royal Commission on Tuberculosis issues its Report, the Local Government Board will not sanction the inclusion of phthisis amongst the compulsorily notifiable diseases; while voluntary notification, adopted by Harpenden, East Barnet Valley, and St. Albans only resulted in 3 notifications in 1901, 3 in 1902, none in 1903, 1 in 1904, and 4, all in St. Albans, in 1905. The desirability of eventual compulsory notification is, however, again urged by several District Medical Officers of Health. As has been proved, for instance, in New York, it would enable the sanitary authorities to do their best both for the patients and for their neighbourhood; and, unless they failed in their duty of secrecy, it would entail no moral hardship on the sufferers. The strongest arguments against it are the slow development and supposed low infectivity of the disease; other arguments would appear to be no more valid against phthisis than against scarlet fever. Without notification we are hopelessly handicapped. Thorough notification is, in military language, the work of a trustworthy Intelligence Department, without which strategy is impossible.

Sanatorium accommodation for phthisis is not at present provided by any sanitary authority in Hertfordshire. It may be noted that those who advocate it do so on three different and somewhat conflicting grounds, with a view to (1) the cure of cases before discharge, a matter necessitating an average stay of each patient for at least six months; (2) the isolation of the disease; and (3) the education of patients as to

their home-life, in the hope both of curing their own condition and preventing the infection of those amongst whom they work and live. The latter would appear to be the most practical solution of the problem at present; and at Brighton, for instance, where patients are thus housed and instructed for a month at the public cost, good results have certainly been obtained. This method might with advantage be adopted by the authorities of poor-law infirmaries, and in the vacant wards of existing isolation-hospitals, the patients being easily discharged without hardship when the wards are required for the accommodation of more virulent infectious diseases. In the intervals of epidemics, especially during the summer, isolation-hospitals would thus double their utility.

The Watford Council is thus strongly recommended by its Medical Officer to devote their smallpox hospital at Holywell to the treatment of phthisis. In case of smallpox occurring the hospital would still be available within 24 hours for the reception of a case.

The recent International Congress for Tuberculosis at Paris in October, 1905, provided further evidence as to the success of these and other methods for combating the disease, confirming the principles already sufficiently well understood at least in medical circles in this country. It is inadvisable to make definite recommendations, as the report of the Royal Commission on Tuberculosis is expected this summer. Next year, when this report has been published and discussed, it is hoped the County Council, with the support of the Hertfordshire public, will devise a systematic campaign against this serious scourge.

CAUSES OF DEATH.—CANCER.

This refers to all forms of malignant disease, whether carcinoma, which seldom occurs before the age of 30, rodent ulcer, also a disease of advanced life, or sarcoma, which occurs from infancy upwards.

TABLE 18.—DEATH-RATES FROM CANCER, 1902–5.

(For individual Districts see flyleaf at end)	Rate, 1902.	Rate, 1903.	Rate, 1904.	Rate, 1905.	Number, 1905.
Urban Districts ...	0·76	0·83	0·91	0·93	158
Rural Districts ...	0·86	0·77	0·90	0·87	92
County	0·80	0·81	0·91	0·91	250
England and Wales	*0·84*	*0·87*	0·88	Not yet	computed.

This rate varied in Urban Districts from 0·2 (Barnet) to 2·3 (Sawbridgeworth), in Rural from ·0 (Barnet) to 1·8 (Welwyn). But the rate for a single year in a small district is no criterion of the causes in that district and year leading to cancer. Cancerous patients often live for several years, especially after operation, and are finally carried off by some accident of the disease, such as a secondary deposit invading a blood-vessel, or by some complication set up by chill or fatigue. The general tendency of the disease, however, shows remarkable uniformity; and the wider the area from which figures for the disease are collected, the more uniform do they become. Thus the death-rate from cancer for the whole County in the past four years has varied only from 0·80 to 0·91, and the average for the last six years even of the small districts of Hertfordshire varies only between 0·6 in six of those districts to 1·5 in the small town of Royston. The total number of deaths in the County from this disease shows a steady increase, due in part to the increased attention paid to the disease and the increasing knowledge of it and skill in its diagnosis amongst medical practitioners fresh from their training. These numbers in 1898 and following years have been 74, 73, 209, 208, 211, 216, 246, and 250.

The following figures from the Registrar-General's Reports are also of interest for purposes of comparison :—

TABLE 19.—DEATH-RATES FROM CANCER, 1881–1900.

	England and Wales.	London.	Herts.
1881–1891, both sexes ...	0·59	0·68	0·67
1891–1900, „ „ ...	0·75	—	—
„ „ males	0·60	0·72	0·69
„ „ females	0·91	0·99	1·03

The cancer death-rate in London for 1901–4 was 0·99; in 1905, 1·00.

Here, as usual, the death-rate from cancer is highest among females; and in both sexes it is rising.

As in Hertfordshire, so also in England and Wales deaths from cancer have risen from 0·40 per 1000 of population in 1866–70 to 0·50 in 1876–80, 0·63 in 1886–90, 0·80 in 1896–1900, and 0·88 in 1904. It is probable that, through greater precision of diagnosis and greater facilities for operation, several deaths are now attributed to this disease which formerly would have passed undiagnosed. It is, of course, a disease of adult and old age, only three cases in the county having died of cancer this year at less than 25 years of age, while 113 of the 250 deaths were in people over 65 years old. This and the increase at all ages is shown by the following rates of mortality from cancer, *per thousand living at certain ages* over 35, for certain groups of counties in 1904, and in the previous half-decade.

TABLE 20.—DEATH-RATES FROM CANCER

In groups of counties, 1899–1904.

	35–45.	45–55.	55–65.	65–75.	75 upwards.
Urban Counties, 1899–1903 ...	·71	2·11	4·26	6·48	7·06
„ „ 1904... ...	·73	2·14	4·32	6·82	7·48
Rural Counties, 1899–1903 ...	·57	1·71	3·77	6·26	7·10
„ „ 1904... ...	·53	1·74	3·92	6·84	8·16

This table also shows a smaller death-rate in the Rural than in the Urban counties, despite the larger proportion of old persons in the former.

English rates of mortality from cancer compare unfavourably with those of other countries, the average rates for the last ten years ranging from 1·27 in Switzerland, with the English figure fourth highest at 0·80, and the German sixth at 0·71, down to 0·34 in West Australia, 0·33 in Hungary, 0·16 in Jamaica, and 0·08 in Servia.

Cancer causes one-eighteenth of the total death-rate for England and Wales, over one-thirteenth of that for the county, and prevention is impossible while its nature is still unknown. Under the auspices of the Royal Cancer Research Fund and elsewhere much good work is being done for its investigation, and by endowing such research a public body or private person may render the very greatest service to mankind.

CAUSES OF DEATH.—SENILE DEATHS.

This heading is given to show the proportion of deaths that take place in persons over 65 to deaths occurring at all ages. It gives some idea of the longevity of the population.

TABLE 21.—Percentage of deaths over 65 to deaths at all ages.

(For individual Districts see flyleaf at end.)	1901.	1902.	1903.	1904.	1905.
Urban Districts	33	34	34	34	35
Rural Districts	39	41	41	41	42
County	35	37	36	37	37

This figure remains remarkably still. The average of the past six years varies in the Urban Districts from 26·3 (Watford) to 44·3 (Sawbridgeworth); in the Rural from 28 (Barnet) to 53·4 (Buntingford). This is as might be expected. The more rural the population the greater the proportion of veterans, and the greater, therefore, the proportion of senile deaths.

The proportion of old persons in the whole population by the census of 1901 is as follows :—

TABLE 22.—PERCENTAGE OF POPULATION OVER 65.

	Number over 65.	Number at all ages.	Percentage	
Urban Districts	8,584	155,150	5·7	
Rural Districts	6,763	103,273	6·5	
	15,347	258,423	5·9	

In 1904, of 1,000 males living in Hertfordshire between 65 and 75 years of age, *60* died; of those between 75 and 85, *132* died; of those over 85, *336* died. The corresponding numbers for the female sex were *49*, *119*, and *312*. These figures, with the same exception as last year of those for over 85, are better than those of any other neighbouring county, except Buckinghamshire. Old people, in other words, until they reach 85, live longest in Bucks and Herts.

EPIDEMIOLOGY.

Epidemic or infectious diseases are liable to form an overwhelming proportion of all causes of death at any time in any community. They are the most variable factor in the death-rate. They are the most obviously dependent on certain recognised conditions, and they are the most easily stamped out and prevented from recurrence. Thus, by the improvement of general sanitation, and by the perfection of national isolation from infectious disease, bubonic plague, cholera, and typhus, which once caused fearful ravages in this country, have been stamped out; by improved soil-drainage and house-construction, and the obliteration of stagnant swamps, the breeding-places of the anopheles mosquito have been abolished and immunity secured from malaria, while vaccination is mainly responsible for the reduction to small proportions of the intermittent outbreaks of smallpox. At the same time existing epidemic diseases appear in a far less virulent form, and the fatality of diphtheria has been greatly reduced by the discovery of a corresponding antitoxin. These circumstances have occasioned a very great reduction of the death-rate, to which allusion has already been made; but their absence in the case of the Indian cities quoted asserts the constant power of disease, and they must not be allowed to lull us into the contented enjoyment of a fool's paradise. The work of prevention of preventible disease is still in an early stage, and our efforts should be unremitting until all epidemic disease becomes, as plague has become in these Islands, an anachronism.

Epidemic disease depends on parasites which feed under certain conditions on the human frame, and are conveyed from sick to healthy. The science of epidemiology seeks to establish the nature of these parasites, the conditions under which they grow outside and inside the human body and the bodies of other animals, the channels by which they are communicated, and the measures, individual and social, by which such growth or communication may be prevented. The further our knowledge extends, the more diseases will be included in the scope of this science; and tuberculosis and diarrhœa, the death-rate from which has already been discussed, now belong, strictly speaking, to the same group of diseases, and cancer will probably before long be similarly included. For practical purposes, however, the term epidemic disease is limited to certain common infectious diseases, whose communicability has long been established.

The epidemic death-rate refers to seven particular epidemic or infectious diseases, excluding influenza, puerperal fever, erysipelas, and tuberculosis.

TABLE 23.—EPIDEMIC DEATH-RATES, 1902–5.

(For individual Districts see fly-leaf at end.)	HERTFORDSHIRE				Herts. Urban, 1905.	Herts. Rural, 1905.	Rural Engl'd, 1905.
	1902.	1903.	1904.	1905.			
Smallpox	·07	·01	·00	·004	·00	·009	·00
Measles	·16	·15	·17	·06	·05	·07	·24
Scarlet Fever	·07	·03	·03	·02	·02	·02	·09
Whooping-cough	·13	·21	·19	·19	·23	·12	·20
Diphtheria and Croup	·18	·12	·05	·09	·07	·11	·15
Enteric and Continued Fever ...	·04	·02	·04	·03	·04	·02	·09
Diarrhœa	·16	·13	·60	·22	·27	·13	·32
Totals	·81	·67	1·08	·61	·68	·48	1·09

The following average figures for 1881–1900 from the Registrar-General's Reports are useful for purposes of comparison. Whooping-cough is the common exception to the common rule of greater mortality from infectious diseases amongst females than amongst males.

TABLE 24.—EPIDEMIC DEATH-RATES, 1881–1900.

	HERTS.				LONDON.		ENGLAND AND WALES.	
	1881 to 1890.	1891 to 1900.	1891 to 1900. Males.	1891 to 1900. Females.	1881 to 1890.	1891 to 1900.	1881 to 1890.	1891 to 1900.
Smallpox	0·01	0·01	0·01	0·00	0·14	0·00	0·05	0·01
Measles	0·31	0·21	0·21	0·20	0·64	0·58	0·44	0·41
Scarlet Fever ...	0·16	0·05	0·06	0·05	0·33	0·19	0·34	0·16
Whooping-cough ...	0·36	0·28	0·26	0·30	0·69	0·50	0·45	0·38
Diphtheria	0·22	0·18	0·17	0·20	0·26	0·50	0·16	0·26
Typhus	0·00	0·00	0·00	0·00	0·01	0·00	0·01	0·00
Enteric Fever ...	0·11	0·10	0·11	0·09	0·19	0·14	0·20	0·17
Simple Continued Fever	0·02	0·00	0·00	0·00	0·02	0·00	0·02	0·01
Diarrhœa	0·44	0·47	0·50	0·40	0·77	0·78	0·67	0·73
Totals	1·63	1·30	1·32	1·24	3·05	2·69	2·34	2·13

Except for epidemic diarrhœa, there appears to be a steady diminution of mortality from epidemics, owing largely to improvement of preventive measures and of sanitary administration.

The epidemic death-rate for Hertfordshire in 1905 (·61) is the lowest on record, every factor being less than half the corresponding factor for the average of the last decade, 1891–1900, and every factor except those for whooping-cough and diphtheria, showing a decrease from last year. The rate for diarrhœa, however, is still higher than in 1902–3. Every factor again, except for the one unfortunate case of smallpox, is better than the figure for Rural England in 1905.

The mortality from infectious diseases varies greatly according to the prevalence and virulence of epidemics; but owing to the more frequent opportunities for infection in populous localities, the epidemic mortality is usually greater in urban than in rural districts. Thus, in Hertfordshire in 1905 the urban districts have an epidemic rate of ·68 against the ·48 of the rural; the former varying from ·0 (Ware, Royston) to 2·5 (Baldock), the latter from ·2 (Berkhampstead, Buntingford, Hemel Hempstead) to 1·8 (Welwyn). The highest epidemic death-rates for the last six years are 1·4 Watford, 1·3 Cheshunt, and 1·2 Tring; while Baldock, Hitchin, Hoddesdon, St. Albans, and Ware Urban, and Hatfield and Hitchin Rural all have average rates over 1·0. The attention of their District Councils should be called to this unenviable distinction.

The number of deaths occasioned by infectious disease in the County during the past six years is as follows:—

TABLE 25.—*Deaths from Infectious Disease*, 1900–5.

	Urban.						Rural.					
	1900.	1901.	1902.	1903.	1904.	1905.	1900.	1901.	1902.	1903.	1904.	1905.
Smallpox	0	0	12	1	0	0	0	0	6	0	0	1
Measles	15	27	37	36	32	9	24	13	6	5	15	8
Scarlet Fever	4	16	10	5	8	3	2	10	8	3	1	2
Whooping-cough ...	38	49	20	32	30	39	24	20	15	25	22	13
Diphtheria and Membranous Croup ...	35	27	26	23	7	13	22	17	22	10	7	12
Enteric Fever ...	19	10	8	5	9	6	5	2	3	0	1	2
Influenza	89	22	66	21	24	16	74	19	35	18	13	17
Diarrhœa	96	72	25	26	107	47	52	41	18	10	56	14
Puerperal Fever ...	6	2	4	2	1	0	2	5	2	1	5	2
Erysipelas	5	6	3	2	3	6	5	6	6	2	2	4
Tuberculous Diseases	196	180	214	210	219	220	101	100	106	108	128	100
Totals ...	503	411	425	363	440	359	311	233	227	182	250	175

Of some of these diseases we have a fairly certain index also of the number of persons attacked each year. In 1889, by "The Infectious Disease (Notification) Act," power was given to Sanitary Authorities to declare notification of certain diseases compulsory, (*a*) by any medical man having knowledge of the case, and also (*b*) by the head of the family or other relative or friend. The latter clause has been a dead letter, the former being sufficient for the purpose. Most districts in Hertfordshire adopted this Act within a few years, and in 1899 an extending Act was passed making notification compulsory throughout England and Wales as regards the following diseases: — Smallpox, cholera, diphtheria and membranous croup, erysipelas, scarlet fever, typhus, typhoid or enteric, relapsing and continued fevers, and puerperal fever. Apart from the group of vague disorders known as continued fevers, apart from cholera, typhus, and relapsing fever, which we may hope are now extinct in Hertfordshire, we have thus for practical purposes only a definite knowledge of the prevalence of three common and markedly infectious diseases—diphtheria, scarlet fever, and enteric fever—besides smallpox, which attacks the County but seldom and may best and completely be stamped out by consistent vaccination, and puerperal fever and erysipelas, which may well be treated at home or in the wards of a general hospital. Even of these three common diseases we have not full information, for recent experience has shown us that many children considered to have been suffering from a slight cold or only to be peeling while in good health are in effect mild cases of scarlet fever, and have escaped notification; they are still a danger to the community, for mixing freely with the healthy they disseminate the infection. The infective agent every now and then finds out a susceptible child, who may undergo a serious or even fatal attack, even when infected from the very mildest of cases. Isolation, either at home or in hospital, is therefore imperative; and the result of defective isolation is shown by the recent experience of Hemel Hempstead last winter, when, hitherto fairly free from infectious disease, an extensive epidemic of scarlet fever broke out and 426 cases occurred in the Borough and neighbouring Districts (see page 55), the owners of factories and workshops, as for instance the proprietors of the large paper mills, feeling themselves obliged to turn away from work any of their hands living on infected premises. This experience, like a similar incident some years ago at Hertford, has led to an immediate demand for a proper isolation hospital.

By comparing the number of cases notified with the number of deaths registered, we arrive at the proportional fatality, an index of the severity of the prevalent type of disease.

TABLE 26.—*Notifications of Infectious Disease*, 1900–5.

	Urban.						Rural.					
	1900.	1901.	1902.	1903.	1904.	1905.	1900.	1901.	1902.	1903.	1904.	1905.
Smallpox	3	3	82	11	5	2	0	1	28	0	4	1
Scarlet Fever... ...	459	826	749	397	415	380	166	446	453	192	130	306
Diphtheria and Membranous Croup ...	263	223	212	234	137	185	119	158	175	109	59	105
Enteric Fever ...	91	82	47	35	49	38	51	35	14	22	14	18
Continued Fever ...	3	1	0	0	1	0	0	0	0	0	0	7
Puerperal Fever ...	8	7	7	8	3	3	6	7	2	4	5	2
Erysipelas	119	122	119	81	101	121	60	46	38	55	55	65
Tuberculosis (voluntary)	0	3	3	0	1	4	0	0	0	0	0	0
Chicken-pox (adoptive)	0	0	217	312	223	159	0	0	69	171	65	24
Measles (adoptive) ...	0	0	0	0	6	—	—	—	—	—	—	—
Totals ...	946	1267	1436	1078	941	892	402	693	779	553	332	528

TABLE 27.—*Fatality of Infectious Diseases*, 1900–5.

(Ratio, per cent., of Deaths to Notifications.)

	Urban.						Rural.					
	1900.	1901.	1902.	1903.	1904.	1905.	1900.	1901.	1902.	1903.	1904.	1905.
Smallpox	0	0	14·6	9·1	0	0	0	0	21·4	0	0	100·0
Scarlet Fever... ...	0·9	1·9	1·3	1·3	1·9	0·8	1·2	2·2	1·8	1·6	0·8	0·7
Diphtheria and Membranous Croup ...	13·3	12·1	12·3	9·8	5·1	7·0	18·4	10·8	12·6	9·2	11·9	11·4
Enteric Fever ...	20·8	12·2	17·0	14·3	18·4	15·8	9·8	5·7	21·4	0	7·1	8·0
Puerperal Fever ...	75·0	28·6	57·1	25·0	33·3	0	33·3	71·4	100·0	25·0	100·0	100·0
Erysipelas	4·2	4·9	2·5	2·5	3·0	4·9	8·3	13·0	15·8	3·6	3·6	6·2

Before discussing the above facts it will be well to give figures showing the age-groups most affected by each disease (Table 28), the number of cases of each disease notified (Table 29) and the number removed to hospital from each district (Table 30) during the past year.

In the whole County.

Urban. Disease.	Cases notified in all Districts.						
	At all Ages.	In Age-Groups.					
		Under 1.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	Over 65.
1. Smallpox	2	...	...	...	1	1	...
2. Cholera	...	...	...	...	...	...	...
3. Diphtheria and Membranous Croup	185	2	48	103	13	19	...
4. Erysipelas	121	3	4	8	15	84	7
5. Scarlet Fever	380	5	91	240	29	15	...
6. Typhus Fever	...	...	...	...	...	...	...
7. Enteric Fever	38	...	1	14	12	11	...
8. Relapsing Fever	...	...	...	...	...	...	...
9. Continued Fever	...	...	...	...	...	...	...
10. Puerperal Fever	3	...	...	...	...	3	...
11. Plague	...	...	...	...	...	...	...
12. Chicken-pox (adoptive)	159	15	72	66	4	1	1
13. Tuberculosis (voluntary)	4	...	...	...	3	1	...
Totals	892	25	216	431	77	135	8

Rural. Disease.	Cases notified in all Districts.						
	At all Ages.	In Age-Groups.					
		Under 1.	1 to 5.	5 to 15.	15 to 25.	25 to 65.	65 and up'ds.
1. Smallpox	1	...	...	...	...	1	...
2. Cholera	...	...	...	...	...	...	...
3. Diphtheria and Membranous Croup	105	1	16	71	6	11	...
4. Erysipelas	65	3	1	6	4	44	7
5. Scarlet Fever	306	3	58	200	28	16	1
6. Typhus Fever	...	...	...	...	...	..	...
7. Enteric Fever	18	...	3	4	4	7	...
8. Relapsing Fever	...	...	...	...	...	...	...
9. Continued Fever	7	...	2	1	1	3	...
10. Puerperal Fever	2	...	...	...	...	2	...
11. Plague	...	...	...	...	...	...	...
12. Chicken-pox (adoptive)	24	1	8	15	...	...	...
Totals	528	8	88	297	43	84	8

TABLE 29.—NOTIFICATIONS of Infectious Disease In the Districts.

Disease, see Table 28, p. 49.	URBAN DISTRICTS.																		
	1 Baldock.	2 Barnet.	3 Berkhamp-stead.	4 Bishop's Stortford.	5 Cheshunt.	6 East Barnet Valley.	7 Harpenden.	8 Hemel Hempstead.	9 Hertford Borough.	10 Hitchin.	11 Hoddesdon.	12 Rickmans-worth.	13 Royston.	14 St. Albans City.	15 Sawbridge-worth.	16 Stevenage.	17 Tring.	18 Ware.	19 Watford.	Urban Total.
1.	...	...	...	...	...	1	...	...	1	...	...		...	...	...	...	...	...	...	2
3.	...	7	1	...	19	30	...	7	3	4	...	13	5	11	...	...	...	...	85	185
4.	4	3	10	4	8	5	1	8	2	14	1	3	2	4	3	15	2	4	28	121
5.	1	7	14	1	4	24	1	108	9	17	11	28	4	18	3	8	4	1	117	380
7.	...	...	...	3	1	2	...	1	4	3	1	4	2	2	1	3	...	3	8	38
10.	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	..	...	2	3
12.	3	93	3	...	...	14	...	...	...	11	...	...	...	26	...	9	...	...	...	159
13.	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	4
	8	110	28	8	32	76	2	124	19	49	14	48	13	65	16	26	6	8	240	892

Disease, see Table 28, p. 49.	RURAL DISTRICTS.													
	1 Ashwell.	2 Barnet.	3 Berkhamp-stead.	4 Buntingford.	5 Hadham.	6 Hatfield.	7 Hemel Hempstead.	8 Hertford.	9 Hitchin.	10 St. Albans.	11 Ware.	12 Watford.	13 Welwyn.	Rural Total.
1.	...	...	...	...	...	...	...	...	...	...	1	...	...	1
3.	...	13	2	1	3	2	...	2	7	10	11	54	...	105
4.	2	1	8	...	11	1	9	6	5	7	6	9	...	65
5.	12	...	13	16	9	4	74	3	24	36	13	101	1	306
7.	1	...	1	...	...	...	2	2	3	3	1	5	...	18
9.	...	...	...	...	...	...	...	...	7	...	...	...	...	7
10.	...	...	...	...	...	...	...	1	...	...	...	1	...	2
12.	...	...	24	...	...	...	...	...	...	...	...	...	...	24
	15	14	48	17	23	7	85	14	46	56	32	170	1	528

TABLE 30.—REMOVALS TO HOSPITAL

Of Infectious Disease.

Disease, see Table 28, p. 49.	URBAN DISTRICTS.																		
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	Baldock.	Barnet.	Berkhamp-stead.	Bishop's Stortford.	Cheshunt.	East Barnet Valley.	Harpenden.	Hemel Hempstead.	Hertford Borough.	Hitchin.	Hoddesdon.	Rickmans-worth.	Royston.	St. Albans City.	Sawbridge-worth.	Stevenage.	Tring.	Ware.	Watford.	All Districts.
1	No Isolation Hospital.	...	...	...	...	...	...	..	1	No Isolation Hospital.	...	...	...	...	...	No Isolation Hospital.	...	...	...	1
3		...	1	...	14	11	...	2	3		3	9	1	...	...		...	...	66	110
4		...	...	..	...	...	...	...	...		...	...	...	...	...		...	...	...	...
5		1	11	10	3	8	1	72	8		3	26	4	15	...		2	1	98	263
7		...	...	1	1	...	...	...	2		...	3	...	...	...		3	2	4	16
10		...	...	...	...	...	...	...	...		...	...	...	...	...		...	...	...	...
12		...	...	...	...	...	...	...	...		...	...	...	...	...		...	...	...	...
13		...	...	...	...	...	...	...	...		...	...	...	...	...		...	...	...	...
	...	1	12	11	18	19	1	74	14	...	6	38	5	15	...	...	5	3	168	390

Disease, see Table 28, p. 49.	RURAL DISTRICTS.													
	1	2	3	4	5	6	7	8	9	10	11	12	13	
	Ashwell.	Barnet.	Berkhamp-stead.	Buntingford.	Hadham.	Hatfield.	Hemel Hempstead.	Hertford.	Hitchin.	St. Albans.	Ware.	Watford.	Welwyn.	All Distirtcs.
1	...	...	...	...	...	...	...	...	No Isolation Hospital.	...	1	...	...	1
3	...	...	2	1	3	...	...	2		...	9	19	...	36
4	...	...	...	...	...	...	...	...		...	...	...	...	...
5	12	...	12	14	9	2	55	3		36	13	65		222
7	...	...	1	...	...	...	...	2		...	1	1	...	5
9	...	...	..	...	...	...	...	...		...	...	...	...	...
10	...	...	..	...	...	...	...	...		...	...	...	..	...
12	...	...	...	...	...	...	...	...		...	...	...	...	...
	12	...	15	15	12	2	55	7	...	36	24	85	1	26 4

Weekly County Return.—Hitherto knowledge of infectious disease outside their own District is only known to District Authorities, the only knowledge of infectious disease throughout the County is only known to the County Authorities, by the Annual Reports of the following year. The County Council has now given instructions for a weekly voluntary system of notification to be arranged, by which, with the kind help of District Medical Officers, it is hoped to issue by Thursday of every week a table of the cases notified in the preceding week. This will give fairly prompt information, and will assist prompt action.

School Closure and Exclusion from School.—Another measure, of which it is hoped another year to give some account, for the prevention of epidemic disease consists in exclusion of infected scholars from school and closure of schools. For this purpose the Education Committee have issued instructions to all head teachers to notify cases of any infectious disease, not merely the diseases commonly notified, to the Sanitary Authorities. The Managers, acting on the advice of any registered medical practitioner, or two members of the Sanitary Authority acting on the advice of the Medical Officer of Health, may thus close a school, and it is hoped that exclusion of individual scholars may be more frequently adopted than hitherto in the early stages of an outbreak. The very earliest and most doubtful symptoms should be sufficient for exclusion, and a single pronounced case should be a signal for closure. At a later stage closure is of little use.

Smallpox.—In Hertfordshire the number of cases notified in 1900 and following years have been 3, 4, 110, 11, 9, and 3. The corresponding figures for the County of London have been 86, 1,700, 7,796, 416, 489, and 74, showing how closely the two counties are connected epidemiologically. The Hertfordshire cases occurred one each in East Barnet Valley, Hertford Borough, and Ware Rural District. The Hertford case occurred in a common lodging-house, the patient having only come to the town a few days previously. He was removed to the Smallpox Hospital, contacts were kept under observation, and the disease fortunately did not spread. There is serious danger in that no legal powers exist for the detention or re-vaccination of tramps who may be smallpox-contacts. The Ware case contracted the disease on board a ship from Spain. The patient died in the Smallpox Hospital, but no further case occurred.

But by far the most potent weapon in our hands against smallpox is vaccination, a general adoption of which would save the rates almost all the burden cast on them by epidemics of this disease, either actual or possible.* It is instructive to compare the following account of an

* Concerning Vaccination Acts, see pp. 38, 39.—In case any readers of this report should still doubt the efficacy of re-vaccination after 10 years of age, it may be as well to give the mortality of smallpox for Prussia, Berlin, and Hamburg, which during the pandemic

epidemic of smallpox in the days before vaccination was practised: "In the small town of Ware in 1722, out of a population of 2,515, at the beginning of the epidemic, 1,601 had previously had the smallpox, leaving 914 susceptible persons. Amongst these there were during the epidemic 612 cases, with 72 deaths, leaving at the end of the epidemic 302 persons who, having escaped the attack, are spoken of in the record as 'to have the smallpox.'" *

For isolation many districts are depending entirely on accommodation being available at the private smallpox-hospital at South Mimms (Middlesex). But more than half the districts have some sort of accommodation for a few cases, as in Watford and Rickmansworth; Bishop's Stortford, Hadham, and Sawbridgeworth; Tring and Berkhampstead; Hertford, Hoddesdon, and Ware; Buntingford; and the Baldock, Stevenage, and Hitchin Districts, although in several cases of an indifferent kind, and in several only at the expense of their already insufficient accommodation for other diseases. In 1901 the Hatfield District Council provided tents for the reception of cases of smallpox, if the need should arise; and in the following year the East Barnet Valley and Hemel Hempstead District Councils fitted up cottages on their respective sewage-farms for the same purpose.

Chicken-pox.—With a view to the detection of mild or modified cases of smallpox, the compulsory notification of chicken-pox has been adopted for various periods by the Urban District Councils of Baldock, Barnet, Berkhampstead, East Barnet Valley, Hitchin, St. Albans, Stevenage, and by the Rural District Council of Berkhampstead. In the reports for Cheshunt, Rickmansworth, and Watford Urban, and in Hemel Hempstead, Hitchin, and Watford Rural Districts no mention is made of notification, which of recent years has been compulsory in these Districts for this complaint. It must be realised that for the reason for which it was originally made notifiable, namely, the detection of smallpox, it is as useful in the latent as in active periods of the disease, in order to catch the first case that may otherwise lead to an epidemic of smallpox. Even in the Districts in which cases are being notified, no attempts appear to have been made to persuade the parents to notify in the absence of medical attendance, and, since this disease is generally allowed to run its course unattended, no idea can be formed of the actual

of 1870–4, for instance in 1871, reached the gruesome figures of 2·432, 6·32, and 10·75 per 1000 per annum; but, when in consequence of this fearful outbreak re-vaccination was made compulsory, the mortality shrank, and so soon as 1881 was as low as ·036, ·047, and ·022, while in London it was still ·61, in Paris ·49, and in Vienna 1·23 per 1000.

* Page 12 of the Final Report of the Royal Commission on Vaccination, published in 1896; Eyre & Spottiswoode.

number of cases that existed. It cannot be too strongly urged that District and Borough Councils, in declaring these diseases notifiable, should take steps by issuing handbills, posting public notices, and advertising in the local Press to make known to parents and householders their duty to notify.

Measles and Whooping-cough.—Both these diseases were somewhat prevalent during the year, and together accounted for nearly 9 per cent. of the deaths under five years of age.

The heavy annual mortality from measles is to a considerable extent due to neglect during the early stages of illness; parents seldom appear to realise the seriousness of the malady until lung complications have arisen.

The fact that measles is contagious for several days before the rash appears, minimises much of the value of notification. Prompt notification, however, in schools by the teachers would give the sanitary authority early warning of the existence of an epidemic and enable them by early closing of the infants' classes to cut it short. The fact, however, already given makes it of no use to close a school except in the very earliest stage of an outbreak. It is to be hoped that these remarks will be laid to heart by all school managers.

The notification of whooping-cough by school teachers would similarly be beneficial.

In 1904, as in 1903, measles was notifiable in Stevenage, but no cases were notified this year, and presumably, therefore, it is no longer a notifiable disease in any Hertfordshire district. It is a useful measure for the detection of anomalous cases of smallpox; but for the curtailment of the disease, which, in view of its annual contribution to the death-rate, cannot be considered lightly, a thorough system of notification from the schools is of considerably greater value, since, for children suffering from the disease before being sent to school, little more can be done by the sanitary officials than to emphasize the need of home-isolation.

Scarlet Fever.—This disease, although still milder and less common than in 1901, caused a rise of notifications from 545 in 1904 to 686 in 1905. This rise is not merely due to the outbreak at Hemel Hempstead. It has occurred in 9 out of the 13 Rural Districts, and is therefore fairly general throughout the Rural parts of the County, more especially, however, in the southern and western half, as in 1904. The notifications for 1898 and subsequent years show a marked wave with its crest in 1901–2; namely, 337, 557, 625, 1272, 1202, 589, 545, 686. The fatality, although of less value because of the smallness of the numbers concerned, nevertheless in the main shows a decided correspondence. Now it is well known that the prevalence of scarlet fever rises and falls,

not only with the seasons in any one year, but also in rhythmic waves over a series of years, such a wave occupying five or six years; and that this rhythm is subject to an even larger rhythm with a wave-length of about 30 years. During the last century scarlet fever was especially prevalent and malignant in the years 1801–4, 1834, 1861–70, and recently 1900–2. If, then, we are now on the downward grade of the 30-year swell, the increase this year over last would look as if we were on the upward grade of one of the minor five-yearly waves of the disease, subject always, in every year, to the seasonal ripples. We must look, therefore, to a renewed increase of the disease next and future winters, and not reduce our preparations because the outbreaks of the last 15 years have been growing milder.

The chief outbreak of the year has been that in and around the Borough of Hemel Hempstead, including the Borough and Rural District of Hemel Hempstead and the Rural Districts of Berkhampstead and Watford. The monthly incidence of these cases was as follows:—

TABLE 31.—EPIDEMIC AT HEMEL HEMPSTEAD, 1905.

	HEMEL HEMPSTEAD.				BERKHAMPSTEAD.				WATFORD.					
		Rural District.				Rural District.				Rural District.				
	Borough.	Kings Langley.	Flamstead.	Markyate.	Urban District.	Northchurch. Berkhampstead	Aldbury.	Nettleden.	Urban District.	Abbotts Langley.	Bushey.	Watford Rural.	Rickmansworth.	Chorleywood.
January...	1	1	—	—	1	—	—	—	11	1	2	1	—	—
February..	—	—	—	2	—	—	—	—	17	—	2	8	1	1
March ...	—	—	1	—	—	—	—	—	20	1	—	5	1	1
April.....	—	—	—	—	—	—	—	—	5	—	1	5	—	—
May	4	1	4	1	4	—	—	—	6	—	—	—	—	—
June	1	3	7	3	3	1	—	—	10	6	1	2	—	—
July	14	2	6	—	4	—	—	—	3	5	1	9	—	—
August ...	8	—	1	1	—	3	—	—	9	2	1	1	—	—
September	27	7	4	2	—	4	2	1	8	9	1	7	—	—
October...	30	4	3	1	—	—	—	—	12	5	—	2	—	—
November	11	—	—	—	1	1	—	—	12	7	—	2	—	—
December	10	8	1	1	1	—	—	—	5	6	1	2	—	—
		26	27	11		9	2	1		43	10	44	2	2
	106	74			14	13			118	101				

Total of epidemic in these 6 Districts, 426.

From this table of monthly distribution in parishes it would seem that the chief epidemic ran from May to the end of the year, and numbered some 350 cases. It appears to have started, at least as one focus, at Markyate in February, spread to Flamstead, lain there concealed probably in some unnotified case during April, and started afresh in May. Another focus was at Bourne End, where three Districts meet. Here 16 cases occurred in 12 houses, 10 being children attending the Bourne End National School, 5 belonged to the Borough, 6 to the Rural District of Hemel Hempstead, and 5 to the Berkhampstead Rural District. In May, June, and July cases occurred in all these six districts, in August the epidemic seemed to have died down, but in September it flared up again, in October it was at its height in the Borough, and both there and in the two Watford parishes it was carried over to the present year. Its ultimate origin, therefore, is obscure, but it would seem probable that the continuance of cases throughout the year in Watford points to that town being the starting-point, from which infection was conveyed to several points in the other Districts, thus starting several minor outbreaks, the most important being those in Hemel Hempstead, Flamstead, Bourne End, and Abbotts Langley, all of which centre round the Borough; besides the two Watford parishes, the parent centres of the disease.

The methods employed for the *isolation* of the disease will be dealt with under the heading of Isolation Hospitals.

The *influence of schools* in propagating disease is clearly shown in this epidemic. In Berkhampstead Rural District 10 out of 16 cases at Bourne End, both cases at Aldbury, 3 cases at Potten End, respectively attended the same school. In Great Berkhampstead all 14 cases, with one exception, were attending schools in the town. In Hemel Hempstead Borough 76 families were attacked, and in 62 of these the first cases were in school-children. Eighty out of 106 cases were in children attending schools, only 3 attending private schools. In the Rural District the disease spread by school-attendance from Markyate to Flamstead; in Kings Langley 20 out of 26 cases were of school-children, 4 being of adults who presumably caught the disease from them; in Flamstead 21 out of 27 attacked were attending the Flamstead and 2 the Cheverell Green Schools; while 8 out of 11 cases at Markyate were going to school. Similar instances are shown in Watford and in Sawbridgeworth, where 2 cases were notified within two days of each other, both of children attending the same school and infected, presumably, from a common unsuspected case. Many children only show the infection by peeling, as in several cases at Kings Langley; and at Markyate, where a boy was found peeling while at work, the Council

took action and the father was fined. It is therefore of the very first importance that some instruction be given to head-teachers in determining unsuspected cases of scarlet fever, and I should propose that I be instructed to visit them all during the course of the next year for this purpose.

The danger in any part of the County of infection from London or elsewhere at a distance is shown by a case imported to Sawbridgeworth in a London child visiting his relations for the benefit of his health, and in a boy who arrived in Royston from London on August 10th with the disease on him. In Buntingford and in several other Districts the Medical Officer of Health for East Herts and Essex found that many persons had been suffering from bad colds, sore throat, and, in some cases, stiff-neck ; and these cases appeared connected with those definitely diagnosed as scarlet fever.

"Return-cases," or fresh cases apparently infected from a convalescent discharged from hospital, occasionally occur. In Harpenden a girl thus developed the disease a few days after her arrival on a visit from her home, where her sister had been discharged, apparently well, after six weeks in hospital. In Hemel Hempstead Rural District convalescents discharged even after seven weeks in hospital appear to have spread infection, while one man caught the disease from visiting his child in hospital. The Medical Officer of Health therefore suggests that visits should only be allowed to patients seriously ill, and that the method of discharging patients from the present hospital at Hemel Hempstead should be improved.

Allusion has already been made to the danger of infection spreading through mild and unrecognised cases. This is all the more frequent, as in such cases, even when recognised to be slightly out of health, medical assistance is frequently not called in and so no kind of isolation is undertaken. This brings us to a consideration of the next heading.

Catarrhalis Fever.—This disorder, otherwise known as the Hertford Epidemic or Dunn's Disease, appears to have subsided during the past winter. It was first described by Dr. Dunn, who in 1904 found groups of cases differing from the usual type of scarlet fever. Dr. Mervyn Gordon, discoverer of the microbe supposed to be the specific agent of scarlet fever, undertook to investigate these cases from the bacteriological standpoint, and found a distinctive bacterium in 22 out of 24 cases examined, differing from those of scarlet fever, cerebro-spinal meningitis, and influenza, but identical with the Micrococcus Catarrhalis, first described by Seifert and then in 1896 by Pfeiffer, and again in March of this year in Paris in outbreaks somewhat resembling influenza. In the 162 cases described by Dr. Dunn scarlatinal rash and peeling occurred

in 50, sore throat in 100, nasal discharge in 100, and discharge from the ear in not a few. Some cases appeared more like those of influenza, others of meningitis; others—infants—manifested convulsions associated with bronchitis; but a common history of infection appeared to place them in the same class. It might be thought that they were only anomalous cases of scarlet fever, and that this disease might be associated either with Dr. Gordon's Streptococcus or with the Micrococcus Catarrhalis. But in a conference of Herts Medical Officers of Health, summoned by myself for the discussion of this disease, in November of last year, to which colleagues from neighbouring counties were invited, Dr. Thresh, of Essex, and Dr. Clark, of Cheshunt, both gave instances of cases admitted to hospital for doubtful scarlet fever developing typical symptoms of scarlet fever after a few days, thus proving that the disease from which they originally suffered, similar to that described by Dr. Dunn, was of a different nature.

As a result of this conference, a statement of the symptoms and chief features of this disease was drawn up by myself and issued by order of the County Council to all registered medical practitioners in the County, asking them to keep note and inform the District Medical Officers of Health of any outbreaks of disease resembling this in nature.

In the original epidemic recorded by Dr. Dunn, definite information was obtained of 164 patients, 16 of whom died, and in his belief every village and nearly every household of his Combined District was attacked. Dr. Thresh, the County Medical Officer for Essex, has during the past winter had evidence of its existence also in the part of Essex adjacent to Hertfordshire. Dr. Dunn, in his Annual Report for 1905, says that, despite careful enquiries, he has had information of only a few sporadic cases since April last, 3 in Hertford, 2 in Watton (Hertford Rural), 7 in three families at Hadham—the mother of the first patient, while away from home, having had a severe cold and sore throat, with a nasal discharge showing the Micrococcus Catarrhalis, but without rash—10 in the Buntingford District, where several people appear also to have been ailing with severe colds and sore throats, often associated with stiff-neck.

The Medical Officer for Cheshunt refers to two cases sent for admission into the isolation hospital as cases of scarlet fever.

The Medical Officer for Hatfield discusses the subject at length, and seems to consider the disease as an example of the primitive disorder from which the distinctive groups known as scarlet fever, influenza, and the like have by evolution developed. His conclusion, that the matter does not enter seriously into the practical work of a medical officer of health, can hardly be accepted in the light of the cases already

mentioned, in which, through confusion with scarlet fever, patients were isolated with cases of scarlet fever and infected with scarlet fever in addition to their original disease. But that disease is essentially variable, and that catarrhalis fever may be, as Dr. Hamer, of the London County Council, put it at our conference, amongst the 'trailers' of an influenza epidemic, appears by no means improbable. Bacteriology is still in its infancy, and the specific agent or agents of most of the common infectious diseases are still unknown or only partially known. But bacteriology must in the future be the scientific basis of measures for the prevention of disease. Under the term influenza we may have confused symptoms caused by a dozen different organisms. But cases due to any one organism, cases for instance of catarrhalis fever, will still remain a group apart, to be treated apart, and, if not treated apart, liable to infection from any other bacteria with which they may be brought in contact. It is of supreme importance, therefore, for dealing with these cases that we should learn to distinguish them from cases of definite scarlet fever, should treat them separately in isolation, and should record their occurrence. Being unable to look forward in the near future to any pecuniary aid for that bacteriological work which is essential for the furtherance of preventive medical science, it is at least advisable to continue observations on the subject.

Diphtheria.—This disease shows some increase both in number of notifications and in fatality from 1904, when, except for fatality in Rural Districts, both factors were the lowest recorded at least since 1899. In 1898 and subsequent years the numbers have been 263, 304, 382, 381, 387, 343, 196, and 290. The rise from 1904 has taken place chiefly in Watford Urban and Rural Districts, from 38 and 16 cases to 85 and 54, an increase of 85 cases in all, with a rise from 3 to 13 in the Rural District of Barnet. This disease is ten times as fatal to the individual attacked as scarlet fever, and in the Urban Districts the fatality has risen from 5·1 to 7·0 per cent. since 1904. These figures, however, are a great improvement on the 13·3, 12·1, 12·3 recorded in 1900–2; and the improvement is probably to a considerable extent due to the increased use of antitoxin, which is kept and sent out by the Cheshunt and Hitchin District Councils, and on loan by the Council of the East Barnet Valley District, and might with advantage be provided by other Councils. The greater difficulty in treating cases early with antitoxin in rural areas may partly account for the fact that in the Rural Districts the fatality during the past two years has still been 11·9 and 11·4 per cent. It is a question for consideration whether District Councils should be advised to keep supplies of antitoxin for issue in emergencies on such terms as in the East Barnet Valley District insure them against financial loss.

Bacteriological examination of the throat—a most important measure for the diagnosis of the disease—is undertaken in the East Barnet Valley, Cheshunt and Hitchin Urban, and East Herts Districts. But for this examination many cases in Watford Rural District would have passed undiagnosed.

This early recognition of doubtful cases is of great importance for the prevention of infection. At Furneaux Pelham in the Hadham District a cousin came for a short visit suffering from sore throat. He had come from a house in which four children had sore throats, which eventually proved to be diphtheria. The visitor infected two inmates of his cousin's household, and of these three patients two died. In Watford Rural District 27 cases occurred in two institutions, and several were attending public elementary schools. In Hoddesdon, again, three cases occurred in one family through insufficiently early recognition and isolation; and at Watford a diphtheritic child attended a Christmas party and infected five others. But the disease may also be caught from domestic animals, as at Hitchin, where a child in the habit of nursing a cat developed diphtheria, and gave rise to a second case by infection. From Standon, in the Ware Rural District, two cases were sent into hospital for diphtheria and were found to be suffering from scarlet fever.

In order to detect early cases, the Medical Officer at Watford arranged with the head-teachers of all Board Schools to send in the names and addresses of children suffering from sore throat, and as a result was informed of 22 suspicious cases. Similar steps have been taken at Cheshunt, Hitchin, and Baldock. It is to be hoped that the County Council may, as Educational Authority, give instructions to this effect to all head-teachers in the county.

The connection of diphtheria with defective sanitation is again illustrated in the Royston, Watford Urban, Watford Rural, and Hitchin Rural reports. At Watford 45 out of the 85 cases occurred in the Callow Land Ward, in which the Medical Officer points out every year in vain the fall of certain sewers as inadequate to prevent stagnation. In Watford Rural District four cases out of five at Chorley Wood occurred amongst insanitary conditions, which in the opinion of the Medical Officer can only be properly remedied by a sewerage scheme. In Hitchin Rural District three cases in Ickleford, and one each in Ippolyts, Walsworth, and Kings Walden appeared due to sanitary defects. These defects in these several districts should be corrected without delay.

Enteric Fever.—This disease accounted for fewer notifications than in any of the last eight years. In 1898 and following years the number of cases notified have been 170, 250, 142, 117, 61, 57, 63, and 56. The fatality, however, in the Urban Districts is still 15·8, as compared with

9 and 11 in 1898–9; although in the Rural Districts it was in those years 14, 23, and now is 8·0. Improvements in sanitation and especially in the water-supply of the County are mainly responsible for this reduction, which it may be hoped is permanent; but Hitchin Rural appears to have had ten cases of the disease, two at Ickleford, eight at Mangrove due to faulty sanitation and spread by defective nursing, in other words, by want of isolation-accommodation; while Baldock, having often in the past suffered from a polluted water-supply, on which I reported in 1902, has not yet completed arrangements for a public supply. Other cases attributed to sanitary defects are reported from Hitchin, St. Albans, Watford, an insanitary house and yard, milk and water-supply being acquitted; Ashwell, a polluted well in the boulder-clay; Wheathampstead in St. Albans Rural District, where in 1903 seven cases of diphtheria occurred and the Medical Officer was called on by the Local Government Board to report on the insanitary conditions that might have caused it, as to which his last report is silent; and Tewin in Hertford Rural, where two cases occurred in the same cottage as two cases three years ago, clearly incriminating some local condition not mentioned in the report.

The danger of infection in schools and institutions is referred to from Sawbridgeworth and Watford Rural, where two nurses and another case occurred in Leavesden Asylum. Ware Rural reports a case imported from London; Cheshunt a case infected from eating oysters, Hertford from eating other shell-fish; Watford Rural reports two cases in young children of 3 and 5.

It would be well for letters to be written to the Councils of Baldock and Hitchin Urban, Hertford, Hitchin, and St. Albans Rural Districts, referring to the above matters and asking what action has been taken.

Influenza.—This disease, not being notifiable in any District, the only possible conception of its prevalence is to be made from the death-returns and by general rumour, reported by the District Medical Officers. In Hitchin Urban and Rural and Baldock the disease is noted as especially mild, and in Hertford cases have been mild although numerous. Deaths from this cause have certainly diminished of recent years, the returns in 1898 and following years being 69, 73, 163, 41, 101, 39, 37, and 33. As in other diseases, there is a certain rhythm in the epidemics, and a return of the disease in severer form is to be expected.

Puerperal Fever.—From this cause 5 cases only were notified and 2 deaths registered. In 1900 and following years the numbers of cases notified have been 14, 14, 9, 12, 8, and 5, with corresponding deaths 8, 7, 6, 3, 6, and 2. The condition usually notified under this name is one of general septic infection, due most frequently to an uncleanly

midwife, and amongst such cases the mortality always rules high. In Bishop's Stortford a case was traced to an unregistered midwife, who was warned and declared she would not attend cases in future. It is to be hoped that "The Midwives' Act, 1902," now being worked by the County Council, will have amongst other effects that of removing this disease from the list of causes of death. Under this Act (see p. 120) any registered midwife attending such a case is bound to call in medical aid and send notice of the fact to the County Council. She is then visited by myself, or, in future, by the Lady Inspector of Midwives. Unregistered midwives, who are the chief danger, will, it is hoped, pass out of existence in 1910. But cases not obviously due to registered midwives can only be dealt with by the District Authority under the Notification and Public Health Acts, information of their occurrence only reaching the County authorities by the Annual District Reports during the following year. The weekly system of voluntary notification by District Medical Officers to myself, which is about to be started, will help, it is hoped, in an earlier control of dangerous midwifery practice.

Erysipelas.—For 1898 and following years the numbers of cases notified and deaths registered from this cause have been as follows:—Notifications: 168, 244, 179, 168, 157, 136, 156, 186. Deaths: 2, 12, 10, 12, 9, 4, 5, 10. With proper care there is small chance of the infection spreading, but at Sawbridgeworth one case treated at home gave rise to another. In Hertford one case occurred apparently through carelessness after vaccination. In the Hadham District eleven cases were notified, four from Braughing, one patient being twice attacked. Preventive measures must include those of general sanitation and personal cleanliness.

Isolation Hospitals.

The detailed Table 30 as to cases removed to hospital for each disease from each District in 1905 has been given on p. 47.

The following Table 32 gives the comparative number removed out of the corresponding numbers notified in each District during the past six years.

TABLE 32.—*Removals to Hospital.*

Urban Districts.	Removals.						Notifications.*					
	1900.	1901.	1902.	1903.	1904.	1905.	1900.	1901.	1902.	1903.	1904.	1905.
1. Baldock	—	—	—	—	—	—	5	2	10	2	5	1
2. Barnet	0	1	19	11	3	1	33	30	34	24	16	14
3. Berkhampstead ...	9	3	5	7	3	12	25	14	13	9	5	15
4. Bishop's Stortford	54	24	20	7	10	11	111	33	27	13	14	4
5. Cheshunt... ...	30	43	46	45	33	18	84	131	105	59	42	24
6. East Barnet Valley	0	0	6	2	9	19	67	58	36	21	40	57
7. Harpenden ...	0	36	5	0	3	1	7	50	15	8	7	7
8. Hemel Hempstead	2	32	22	6	1	74	22	76	32	18	8	116
9. Hertford	15	99	47	20	33	14	18	106	73	25	35	17
10. Hitchin	—	—	—	—	—	—	20	101	89	68	54	24
11. Hoddesdon ...	20	13	27	7	12	6	25	17	43	8	16	12
12. Rickmansworth ...	15	42	49	40	19	38	20	49	52	51	27	45
13. Royston	—	—	—	18	1	5	1	8	7	50	1	11
14. St. Albans ...	22	84	74	8	18	15	42	124	85	22	40	31
15. Sawbridgeworth...	—	2	3	3	3	0	—	4	4	3	7	4
16. Stevenage ...	—	—	—	—	—	—	1	12	4	0	1	11
17. Tring	2	37	15	4	13	5	9	54	25	5	20	4
18. Ware	47	26	20	7	0	3	38	41	61	9	1	4
19. Watford	234	194	310	240	228	168	278	224	373	282	267	210
Totals ...	450	636	668	425	389	390	806	1134	1088	677	606	611

Rural Districts.	Removals.						Notifications.*					
	1900.	1901.	1902.	1903.	1904.	1905.	1900.	1901.	1902.	1903.	1904.	1905.
1. Ashwell	—	—	—	26	12	12	6	6	32	29	13	13
2. Barnet	—	—	7	7	4	0	8	20	35	19	8	14
3. Berkhampstead ...	13	19	4	3	1	15	16	25	6	7	5	16
4. Buntingford ...	5	13	8	8	1	15	11	15	9	8	4	17
5. Hadham	21	9	17	5	3	12	23	11	26	6	5	12
6. Hatfield	0	8	0	5	5	2	11	24	27	20	13	6
7. Hemel Hempstead	8	16	4	3	3	55	25	36	10	12	6	76
8. Hertford	46	45	50	28	4	7	51	57	81	33	5	7
9. Hitchin	—	—	—	—	—	—	34	98	93	34	17	34
10. St. Albans ...	7	67	85	5	17	36	18	123	103	15	35	49
11. Ware	29	28	32	43	17	24	33	54	73	52	24	26
12. Watford	65	73	122	41	30	85	95	161	169	83	69	160
13. Welwyn	3	8	1	0	0	1	5	10	6	5	3	1
Totals ...	196	286	330	174	97	264	336	640	670	323	207	431

* Including only Smallpox, Scarlet Fever, Diphtheria, and Enteric.

The following is the condition of each district as far as can be ascertained from the annual reports of the District Medical Officers of Health. It is hoped by degrees to make this list more complete.

URBAN DISTRICTS.—1. *Baldock.*—None. The present state of affairs is as follows:—

Early in 1900 Dr. J. A. Turner, at that time County Medical Officer, reported to the County Council that as the result of Inquiries held by him he considered that some hospital accommodation ought to be provided for the Urban Districts of Baldock and Hitchin, and the Rural District of Hitchin. In 1901 the Urban Districts of Hitchin, Stevenage, and Baldock, and the Rural District of Hitchin, combined to form

an Isolation Hospital District. In 1904 a site of about seven acres of land, situated some two miles south of Hitchin, on the main road to London, was purchased.

On the 7th December, 1904, a Local Government Board Inquiry was held at Hitchin into the application of the Hitchin Joint Hospital Board for sanction to borrow money for the erection of an Infectious Diseases Hospital. The plans submitted by the Architect, Mr. Adams, provided for the erection of a lodge, administration block, laundry, steam disinfector, and two ward blocks for the isolation of twelve cases of scarlet fever and five each of diphtheria and enteric, twenty-two beds in all at a cost of about £10,000. The Local Government Board agreed to sanction the loan, subject to the analysis of the water taken from the tube well on the site proving satisfactory. At the Local Government Board Inquiry representation was made that the erection of a block for scarlet fever cases was not at present necessary, and the Local Government Board decided that:—

> "If, on consideration, the Joint Hospital Board decide to "postpone the erection of the scarlet fever pavilion, the Board will "not, on that account, refuse to sanction a loan for the remainder "of the Hospital Scheme, provided that the arrangement of the "hospital buildings on the site is so maintained as to permit of the "subsequent erection of the pavilion in question."

Fresh plans were made for a hospital on these lines, but as it would cost £5,000, opinions were divided and no further steps were taken. The County Medical Officer, therefore, held an Inquiry at Hitchin in March of this year, and reported that, as matters were at a complete deadlock, the District Council was in default. Before taking further action under "The Isolation Hospitals Act, 1893," an Inquiry must be made by members of the County Council; and this Inquiry is to be held next autumn, if sanctioned at the next meeting of the Council.

The Medical Officer for Hitchin and Baldock, in his Annual Reports for 1905, considers "that on the exclusion of scarlet fever from the scheme the question of isolation loses its acuteness." He then proceeds to show that cases of typhoid fever can be well treated at the Hitchin General Hospital, and that diphtheria by antitoxin is "robbed of most of its dangers." He has however "no doubt that typhoid and diphtheria . . . would be benefited individually by isolation"; he shows that in his three Districts on an average of five years, apart from 55 cases of scarlet fever in Hitchin Urban alone, there are annually some 20 cases of these two diseases requiring isolation, and says that "if an Isolation Hospital were provided, there is little doubt but that the population of

the several districts would make use of it . . . and the individual cases would doubtless be benefited. Many premises belonging to tradesmen would not suffer so much inconvenience or loss. Children too from infected houses would sooner be able to return to school. There would also be some tendency to limitation of an epidemic." He does not think the benefit worth the expense; and reports a tendency "for the Isolation Board to dissolve and each district to provide for itself."

But it would appear that provision for the isolation of scarlet fever is not excluded, as has been imagined, by the reply of the Local Government Board. Further inquiry explained the somewhat ambiguous nature of their decision. The cases just quoted from Dr. Day's report illustrate the value of isolation for scarlet fever; any gentleman with a servant suffering from the disease would prefer to send her to an isolation hospital; and the exclusion of workers from the paper-mills at Hemel Hempstead during the recent epidemic (see p. 55) confirms the common experience that scarlet fever is a highly infectious disease, and is safest in hospital. Inasmuch, however, as the country is at present free from the disease in an acute form, inasmuch as a considerable proportion of cases are of so mild a type as not to be recognised, and inasmuch, therefore, as comprehensive measures for its extermination are impossible, the Board held it reasonable to accommodate at first only the most urgent cases, on the express understanding that the initial structure will permit of the subsequent erection of the pavilion for scarlet fever. The Board admit that the ideals once held by some promoters of hospital-isolation cannot in the present form of the disease be fully attained; scarlet fever cannot be entirely removed from the life of the community into an hospital and there stamped out. But the common-sense view still holds good, that home-isolation, except in the most intelligent and well-disciplined households, is a failure, and hospital-isolation, where intelligently managed, is a success. It follows that the County Council is responsible for seeing that isolation-accommodation is provided for the four Districts concerned; that if at the forthcoming Inquiry it is shown that the Joint Hospital Board, formed under "The Public Health Act, 1875," has in six years arrived at no scheme for providing isolation-accommodation, the proper course for it to take would be to make an Order constituting a hospital district or districts, under Lord Thring's Act of 1893; and if the Joint Hospital Committee fail to devise a scheme, to dissolve the Committee, and appoint their own nominees for the purpose.

It is unlikely, however, that such drastic measures will be necessary. At the proposed Inquiry information should be demanded as to the readiness and capacity of the Hitchin General Hospital to take in all

cases of typhoid fever; as to the provision by the District Councils of antitoxin; as to the reported preference of each District for the system—more expensive in administration—of separate isolation-cottages instead of a well-built hospital on the very central and appropriate site already bought; as to the usefulness and cost of isolation-cottages, such as those suggested at a cost of £550 for four beds by the County Medical Officer for Wilts; as to the accommodation required in times of epidemic, as in Hitchin in 1901–4 and in Hemel Hempstead last year; and as to the liabilities of the respective Districts and the Joint Hospital Board, if the present site and the well already sunk are not utilised. Meanwhile a report is in preparation for the County Council as to the value of existing isolation hospitals in the County. The general experience in Herts and elsewhere is that, when provided, there has been an increasing disposition of the population to make use of them.

There is one other aspect of the case to which it will be well to draw attention, and that is the need for good nursing and food in the treatment of infectious disease. On these essentials often depend not only the immediate result of the illness but also the after health of the patient. Scarlet fever, unlike enteric, chiefly attacks young children, and it seems a pity when so much is being done for their welfare not to give them the advantage of good nursing in a disease which so often causes permanent ill-health. It must be recognised that an isolation hospital serves a triple purpose: (i) the limitation of an epidemic; (ii) the preservation of individuals in the same house as an infected patient from infection; (iii) the comfort and care of the patient and the relief of his relations from attending upon him. It is only the attainment of the first object that is in dispute, and that, even by the limited number of sceptics, not in all cases.

No mention is made in this year's report of the smallpox hospital, which was used in 1902.

2. *Barnet.*—Temporary iron hospital (with twelve beds, for the isolation of one disease only at a time) erected in 1902 on sewage-farm. Joint Isolation Hospital District with East Barnet Valley Urban and Barnet Rural Districts by Order of County Council, dated January 27th, 1902,—combined population 24,997, assessable value £182,382,—the Board whereof have now chosen a site for their hospital, which they were to have built to the satisfaction of the County Council by March 31st, 1904. It was not, however, till October, 1904, that the Architect's plans were received by the County Council, whose Medical Officer of Health reported on them on December 12th and on the Architect's reply to his suggestions in March, 1905. Meanwhile agitation against the Order of the County Council was renewed; and

a deputation from the Joint Hospital Committee conferred with the County Council as to a recent resolution of the Committee with a view to erecting their hospital of wood and iron. For the erection of such a building the deputation were informed that it was not the practice of the Local Government Board to sanction loans under these circumstances; but in view of the opinion of the Local Government Board expressed at Hitchin (see p. 64) the County Council decided to reduce their requirements from 28 beds to 16, on condition that the contract were signed by June 30th, 1906, and the hospital built by June, 1907. The architect accordingly prepared fresh plans in frequent consultation with the County officials, and eventually showed an estimate of £7,500, which with cost of site and the laying out of roads and fencing would bring the total cost to £11,000. This expense seemed excessive for the number of beds provided, and the County Council have now decided to hold their hands for another year, while the Joint Hospital Committee have at once set to work to prepare plans for building foundations and erecting another hospital of temporary material—wood and iron—out of the rates. It is to be hoped that in this they will at least consult their District Medical Officers, and so avoid some of the mistakes made in the erection of the existing building.

It is to be feared that any such half-measures as are now proposed for a growing and comparatively wealthy District, within 15 miles of London, surrounded on three sides by Districts of another County, unless devised and carried out with the utmost stringency, will break down in case of a serious outbreak. It will be remembered that the case differs from that of Hitchin in that the District Medical Officers of Health have not taken the initiative in the matter, and have only expressed their views repeatedly and strongly in favour of isolation accommodation; that the saving of expense is more apparent than real; that the geographical and financial position makes the need far more urgent at Barnet; and that the Barnet Local Board first proposed the erection of an hospital as necessary and advisable in 1891.

Smallpox cases apparently go to South Mimms, if room can be found for them.

3. *Berkhampstead.*—Joint hospital with Rural District at Aldbury, four miles north-west of the town and about three miles east of Tring. There are eight beds for a combined population of 11,400, and only one disease can be treated at a time. It was opened in December, 1879, and at present comprises:—Lodge, built in 1900: two rooms and larder on ground-floor, three rooms on first floor. Discharge block, built in 1899: three rooms. Administrative block: kitchen, scullery, sitting-room, surgery, store-room, and larder on ground-floor, two bedrooms on

first floor. Ward block, faces S.W. and N.E.: two wards, four beds in each, ward-kitchen or duty-room between, earth-closet and slop-sink at either end of block, disconnected from ward by cross ventilated passage, moveable but no fixed bath. Laundry, disinfection-room (sulphur or formalin used), store-room and ambulance-shed under one roof. Mortuary. The water-supply is from the Chiltern Hills Company, and there is a soft-water well for laundry purposes. Earth-closets are in use, and slop-water is collected into three cemented dumb-wells (about 6 × 10 feet each). The cost of original buildings, excluding cost of site, was £2,162. (The cost of lodge and discharge block is not included.) The annual expenditure has been, in 1900 £947, in 1901 £1448, in 1902 £644, in 1903 £673, and in 1904 £457. The above figures include an annual loan repayment of £130, and from the amounts given for the years 1900 and 1901 a sum of about £200 must be deducted as Tring's share of expenses. It is the usual practice to admit all patients free.

In 1902 an arrangement was made with Tring to receive their smallpox cases at Aldbury, and in return to send diphtheria and scarlet fever cases to the new hospital at Tring, five miles off. On November 29th, 1904, the County Medical Officer of Health held an inquiry at Great Berkhampstead, as a result of which he reported that the proposal he recommended of one hospital for the three districts might be dispensed with if the Aldbury Isolation Hospital Committee would erect four more wards to contain eight beds for the use of the two Berkhampstead Districts. A deputation of this Committee met the District and Parish Councils Committee on March 17th, 1905, and agreed to carry out this suggestion, and subsequent negociations, including an inquiry by the County Council on December 5th, 1906, have left the matter in the hands of the Hospital Committee for the present, on condition that a strip of land be bought from Lord Brownlow, as has been done, for the purpose of extension. When the extension is built it will be possible to isolate three diseases in both sexes at a time.

4. *Bishop's Stortford.*—Arrangement with Joint Hospital Committee for Sawbridgeworth Urban and Hadham and Stansted (Essex) Rural Districts. Their hospital, formerly belonging to Hadham, is in this district, and was enlarged in 1902.

A temporary smallpox hospital has recently been erected in the Hadham Rural District by all four of these combined authorities.

5. *Cheshunt.*—Site acquired at Dig Dag Hill in 1896; temporary hospital erected and used for smallpox in 1902, now for scarlet fever. A loan of £1,124 for land, furniture, sewerage, water-supply, gas-fittings,

and fencing, but not for temporary buildings, was allowed by the Local Government Board after an Inquiry by Dr. Bulstrode an October 17, 1902. After an Inquiry by Dr. Farrar on September 25, 1903, sanction was given by the Board to a loan of £6,081 for the building of a permanent hospital for cases of diphtheria; notice of this sanction was sent to the County Council on January 21, 1905, and it is believed that building is in progress. The County Council will remember that, acting on an Inquiry held by the County Medical Officer on December 9th, 1902, they passed a resolution on May 4th, 1903, to the effect that if the Cheshunt District Council should erect the administrative, diphtheria, and enteric blocks before the end of 1904, and the scarlet fever block before the end of 1905, the County Council would go no further in the matter; but that otherwise it would be their duty to proceed under "The Isolation Hospitals Act, 1903."

During 1905 scarlet fever was isolated in the temporary hospital. Eight cases of diphtheria were sent to Enfield, and five to Hertford. One case of supposed enteric fever was sent to Hertford General Infirmary. There is some arrangement with Enfield, but none with Hertford or South Mimms. Even with Enfield it often takes twenty-four hours to get a patient there. The need of good isolation at Cheshunt is the more necessary as infection is frequently imported from London by the railway and, if not promptly isolated, will become the starting-point of epidemics. The County Council may consider the advisability of enquiring as to the progress of the works.

The Council are erecting laundry, mortuary, and steam-disinfector, which are much needed.

6. *East Barnet Valley.*—See District No. 2.

7. *Harpenden.*—The Sisters' Hospital at St. Albans takes all cases of scarlet fever from the City and Rural District, and from Harpenden. It consists of an administrative block, a ward-block with 36 beds, and a block containing steam-disinfector, laundry, and mortuary. Bath-rooms and a discharging-room were added in 1903. The hospital was given to the city by Sir J. B. Maple in 1893. The permanent staff consists of matron, 2 probationers, 2 maids (one for laundry), and a non-resident porter. The wards are not large enough to contain a total of more than 18 beds, and the accommodation for nurses is insufficient. Only one disease can be isolated at a time, and the urgent need of accommodation for the isolation especially of diphtheria is again emphasised by the Medical Officer of St. Albans city.

In November, 1903, the County Medical Officer held Inquiries on this subject at St. Albans and Harpenden, and reported to the County Council his conclusions that the districts named should combine to

provide further and sufficient isolation accommodation. Adjourned Inquiries were held in both places on June 14th, 1904; and now the Corporation of St. Albans have bought an acre and a half of land immediately adjoining the Sisters' Hospital on which to build blocks for diphtheria and enteric fever. There is need also for a small observation block. The authorities concerned take no step without careful deliberation. Last year a draft agreement was reported to be in preparation. This year it is said to be under consideration. By this agreement the Corporation are to provide money for these sites and the intended buildings; plans and estimates are to be approved by the three Councils; the management of the Hospital is to be undertaken by a Joint Committee. Smallpox is to be provided for on a site of 11 acres belonging to the Corporation of St. Albans at Crouch Hall, near Redbourn, 4 miles north-west of the city. Hitherto these three Authorities have retained 3, 2, and 2 beds respectively at Clare Hall, South Mimms, and the Corporation intended if necessary to erect a tent for the purpose on their Redbourn site, foundations for it having been already laid.

I suggest that the County Council write to enquire as to the progress of negotiations.

8. *Hemel Hempstead Borough.*—Joint Committee with Rural District formed by agreement in 1900. A four-bedded hospital was erected here by the Rural Sanitary Authority in 1887 on a small site, and on this there had further been built a twelve-bedded temporary iron hospital. The site was therefore overcrowded, the accommodation for nurses too small, and it was only safe to admit one kind of infectious disease here at a time. There was a brick lodge and a separate block containing ambulance shed, with good horse-ambulance, laundry, and mortuary. There was one bed sitting room for the only nurse, who was in charge; earth-closets, and no disinfecting stove. A new nurse arrived in April and was told by her predecessor that the post would probably prove a sinecure. The epidemic, however, which has already been discussed (p. 55), began almost at once, and by December 129 cases had been admitted. The inadequacy of the hospital was obvious. Use was made of two cottages and an iron hospital erected on the sewage farm for smallpox in 1902 but never previously used, and two big marquees from Winslow and one from Watford were also purchased for the purpose.

Local Inquiries were held on November 23rd, 1903, by the County Medical Officer of Health and by a Committee of the County Council on February 25th, 1904, November 17th, 1904, and December 14th, 1905, The County Council having no powers in the matter over the Borough, it was hoped that these two Authorities would adopt the recommendations

of the County Medical Officer of Health, as presented to the Council in December, 1903, and erect on a new site of two acres a permanent administrative and two isolation blocks, and re-erect also on it their temporary hospitals, to be replaced by permanent structures within five years. As a result of this epidemic the two Authorities had decided by December, 1905, to adopt this course, and they have now applied to the Local Government Board for the formation of a Joint Hospital Board for this purpose.

It would be well to write and enquire the progress of affairs.

9. *Hertford Borough.*—Joint Hospital Board with Hertford Rural, Hoddesdon Urban, and Ware Urban and Rural Districts. Eight of the new beds are reserved for Hatfield. Enteric fever is treated at the Hertford Infirmary.

The hospital for the treatment of scarlet fever and diphtheria is situated at Gallows Hill, on high ground between Hertford and Ware, now entirely in the Hertford Rural District. Cases of enteric fever are usually nursed at the Hertford Infirmary, but can be treated at the Isolation Hospital if necessary. The hospital is built on a fine site of about six acres, overlooking the Lea Valley, and was increased by twenty beds in 1904. It consists of two ward-blocks for twelve diphtheria and fourteen scarlet fever patients respectively; a new convalescent ward for ten cases of scarlet fever; an old observation block with six beds, and a new observation block with four; making a total of forty-six beds for a combined population of 46,521. The hospital contains an administration building, mortuary, laundry, drying-rooms, a Reck's steam-disinfector and discharging-room, a porter's lodge, and a bacteriological laboratory for the Medical Superintendent, who is Medical Officer of Health to the combined districts of East Herts and Essex. There is also a separate medical attendant. Owing to the pressure on the accommodation in 1903, it was decided to increase the number of beds by 20, twelve of these being for the District (this bringing the number of beds up to 1 per 1000 of the population) and eight for the use of the Rural District of Hatfield. Building operations began early in 1904, and are now complete.

For smallpox, a hospital has been provided by the Joint Hospital Board. A new deep tube-well has been sunk, motive-power being supplied by a windmill, giving a plentiful supply of good water.

10. *Hitchin.*—See No. 1, Baldock.

11. *Hoddesdon.*—Hertford Joint Hospital; see No. 9, Hertford.

12. *Rickmansworth.*—Watford Joint Hospital; see No. 19, Watford.

13. *Royston.*—A Joint Hospital Board was formed in 1900 with

Ashwell and Melbourn (Cambridgeshire) Rural Districts, and the hospital in Garden Walk, Royston, was opened on April 1st, 1903. In 1905 only one case of scarlet fever occurred in Royston, and that one was isolated, with 12 cases from Ashwell, as compared with 18 and 26 cases from the two Districts respectively in nine months of 1903, 1 and 12 cases in 1904. An isolation-hut on the hospital ground has been assigned for the purposes of a discharging-room. There is a steam-disinfector. Sanction for a loan for a new light road off the Newmarket Road instead of the present miserably-kept private road, which is the only approach to the Hospital, was refused by the Local Government Board after an Inquiry, by reason of the deficient durability of the method proposed for its construction.

Smallpox, by a previous report, is proposed to be treated at Holywell Hospital in the Watford Urban District, 40 miles away.

14. *St. Albans City.*—The Sisters' Hospital; see No. 7, Harpenden.

15. *Sawbridgeworth.*—See No. 4, Bishop's Stortford.

16. *Stevenage.*—See No. 1, Baldock.

17. *Tring.*—A hospital containing eight beds. For present arrangements see No. 3, Berkhampstead.

18. *Ware.*—Hertford Joint Hospital; see No. 9, Hertford.

19. *Watford.*—Watford Joint Hospital for Watford Urban and Rural and Rickmansworth Districts, situated on land formerly in the Rural and now, since March 25th, 1904, in the Urban District of Watford. Twenty-four beds were added in 1904, making up a total of sixty-six for a combined and rapidly-growing population of 61,027. It now consists of one large and three isolation wards for twenty-one cases of diphtheria, three isolation wards for five cases of enteric fever, and two large blocks and one isolation-block for forty cases of scarlet fever. It is in the last that cases of scarlet fever are received and kept for the first fortnight, so as to prevent any chance of further infection of the older cases. All blocks are now well heated and fitted with electric light. There is a steam-disinfector. The home has been enlarged by a sitting-room for nurses and fourteen bedrooms for the medical resident and other members of the staff. During 1905 all the old blocks were whitewashed and painted and various minor improvements were effected. The sewage of both old and new blocks now runs by a main sewer directly on to the sewage-farm, the old tank being abolished. 358 cases were treated during 1905, 168 from Watford Urban District (out of 210 of scarlet fever, diphtheria, and enteric fever notified), 90 (out of 160 notified) from Watford Rural, and 39 (out of 45 notified) from Rickmansworth. Eleven patients died. At the end of 1905 there were 61 patients in hospital.

Rural Districts.—1. *Ashwell.*—See Urban No. 13, Royston.

2. *Barnet.*—See Urban No. 2, Barnet.

3. *Berkhampstead.*—See Urban No. 3, Berkhampstead.

4. *Buntingford.*—A small hospital in the parish of Aspenden, capable of treating only one disease at a time. The case of diphtheria notified was isolated there and fortunately recovered in time for 12 out of the 14 cases of scarlet fever to be isolated there. A new bedroom is to be built out for the nurse. For smallpox, it is proposed to use this same hospital, should there be no other patient at the time. There is no steam-disinfector for the District.

5. *Hadham.*—See Urban No. 4, Bishop's Stortford.

6. *Hatfield.*—Arrangement with Hertford Joint Hospital Board for eight beds.

For an epidemic of smallpox, hospital tents have formerly been provided.

7. *Hemel Hempstead.*—See Urban No. 8, Hemel Hempstead.

8. *Hertford.*—See Urban No. 9, Hertford.

9. *Hitchin.*—See Urban No. 10, Hitchin.

10. *St. Albans.*—See Urban No. 14, St. Albans.

11. *Ware.*—See Urban No. 9, Hertford.

12. *Watford.*—See Urban No. 19, Watford.

13. *Welwyn.*—A small iron hospital of six beds for one disease only at a time, supplied with food, etc., from the workhouse close by.

In this connection the attention of Sanitary Authorities is drawn to Memoranda issued by the Local Government Board in 1900, with regard to loans for this purpose, the constitution of joint hospital districts, proceedings under "The Isolation Hospitals Act, 1893," and the site and construction of such hospitals, with detailed plans and drawings.

Disinfection.—Most districts appear to be devoid of any steam-disinfector, although the hospitals at Hertford, Watford, and Bishop's Stortford, and the Sisters' Hospital at St. Albans are properly equipped in this respect. Several Medical Officers of Health, as at East Barnet Valley and Buntingford, refer in their reports to the need of such an apparatus. It is a very urgent need, for there is no other even approximately trustworthy method of disinfecting germ-laden clothes and bedding. In Cheshunt the District Council are erecting a steam-disinfector.

As to disinfection of rooms, even by formic aldehyde or formalin (by far the best fumigant known), fumigation by itself cannot be depended on. Walls and ceiling should be stripped, scrubbed, and repapered or whitewashed, the floors scrubbed, liquid antiseptics used freely, and every single article in the room should be either disinfected by steam, or in the case of books and leather articles opened out and thoroughly saturated with formalin vapour for 2–4 hours. Meanwhile, if necessary, the inhabitants of the room should be boarded out at the public cost, and their clothes treated in a steam-disinfector.

It would be well to write to the hospital authorities at Barnet, Aldbury, Tring, and Hemel Hempstead, to enquire whether any provision is being made for a steam-disinfector and to urge its importance.

Bacteriological Arrangements.—This heading is intended to include vaccination, serum treatment, both prophylactic and curative, serum diagnosis, and bacterial examination.

The administration of the *Vaccination* Acts is entrusted to the Poor Law Guardians, not to the Sanitary Authorities, and Medical Officers of Health have no official knowledge of the value and extent of the vaccination going on in their own districts. At the same time it is one of the most potent forces in preventive medicine,* and was of extreme importance in 1902–3 when smallpox was widely prevalent in London and was constantly invading the adjacent counties. It is earnestly to be hoped in the interests of the public that vaccination and the execution of the other medical and sanitary sections of the Poor Law may before long be transferred to the hands of the County and District Councils. "The Vaccination Act, 1898," which introduced the conscience-clause, will have again to be renewed this year for twelve months, and a new Act is expected so soon as the Poor Law Commission has reported.

The influence of the 1898 Act, with its conscience-clause and provisions for home-vaccination, the employment of glycerinated calf-lymph, and the abolition of arm-to-arm vaccination, enhanced perhaps by stricter observance of aseptic precautions by public vaccinators, is recorded by the Medical Officer of Health for Rickmansworth, who finds that whereas the number of vaccinations was 124, 88, 95, and 71 in the four preceding years, it has in the last six years been 172, 147, 253, 925, 160, 163, and 162 respectively, including re-vaccinations. Primary vaccinations remain a fairly constant figure; re-vaccinations vary with the prevalence or absence of an epidemic. The Local Government Board's reports show increased acceptance of primary vaccination since 1898.

* See under "*EPIDEMIOLOGY: Smallpox,*" p. 52.

As to other bacteriological methods, sanitary authorities may be able to give a great deal of help by arranging for (1) prompt and gratuitous distribution of diphtheria antitoxin, both for the treatment of patients before they are brought to hospital* and for preventing the spread of the disease by protective inoculation of other children in the same house or school as the patient, a method which has been of great service in the County of Essex; (2) bacterial diagnosis, cost free, of swab-specimens and of sputum from suspected diphtheria or phthisical patients; and (3) free serum diagnosis in the case of enteric (typhoid) fever.

Arrangements for the examination of swab-specimens from doubtful cases of diphtheria have existed for several years in the Urban Districts of Bishop's Stortford, East Barnet Valley, Hertford, Hitchin, Hoddesdon, Ware, Rickmansworth, and Watford, and in the Rural Districts of Buntingford, Hadham, Hertford, Ware, and Watford. The Councils of the remaining Districts do not appear to have granted any such facilities, although often urged to do so, as for instance at Harpenden. In some of these Districts diphtheria antitoxin is provided free at the expense of the Councils, as at Cheshunt and Hitchin, and for repayment in kind, as in East Barnet Valley; in some the examination of blood for typhoid fever and of sputum for phthisis is also undertaken. It is desirable that all these facilities should be granted in connection with every isolation-hospital in the County.

* It must be noted that the efficacy of this treatment is very slight after forty-eight hours from the outbreak of the disease, and that 2,000 to 4,000 units must be injected as early as possible for it to take effect. Under these conditions the effect is often marvellous; otherwise it often appears inoperative.

WATER-SUPPLY.

Rainfall.

The influence of rainfall on mortality is considerable, a warm and dry summer, especially one with fewest wet days, favouring dust, decomposition of milk, and so epidemic diarrhœa; whereas a wet and cold winter favours the development of respiratory diseases.

The past year had fewer wet days, and less, in Hertfordshire 6 per cent. less, than the average total rainfall; and although little rain fell in July, June and August were wet months in both respects, and the amount of epidemic diarrhœa and consequent infantile mortality was considerably lower than, for instance, in 1904. The mean temperature for the year was 49·4, slightly below the average of recent years. The autumn was wet and mild.

The following tables of rainfall in 1905 were compiled at Bayfordbury in the *Hertford* Rural District, at Danesbury in *Welwyn* Rural District, at Preston near *Hitchin*, and at *Rickmansworth*. Rain gauge—diameter of funnel, 8 inches; height of top above ground, 14 inches; above sea-level, 480 at Preston (Hitchin), 250 feet at Bayfordbury and Danesbury, 146 feet at Rickmansworth :—

Table 33.—Rainfall, 1902–5.

	BAYFORDBURY.			*DANESBURY.*		
Month.	Total depth. ins.	Greatest fall in 24 hours. Depth and date.	No. of days on which rain fell.	Total depth. ins.	Greatest fall in 24 hours. Depth and date.	No. of days on which rain fell.
January ...	1·41	·57 (16)	11	1·36	·54 (16)	10
February ...	1·10	·44 (26)	13	0·84	·26 (26)	12
March ...	3·04	·41 (10)	12	3·31	·54 (15)	21
April ...	1·95	·46 (9)	19	2·04	·40 (9)	16
May ...	1·25	·75 (30)	8	0·70	·29 (30)	8
June ...	3·25	·83 (5)	14	3·83	·71 (5)	13
July ...	2·41	2·03 (9)	10	1·52	·68 (9)	8
August ...	2·60	·85 (28)	20	2·81	·86 (28)	16
September...	1·53	·64 (25)	12	2·08	·60 (25)	13
October ...	1·34	·28 (29)	18	1·34	·33 (28)	11
November...	3·04	·49 (1, 26)	19	2·84	·44 (1)	18
December...	0·85	·22 (7)	12	0·92	·24 (7)	10
Total	23·77	—	168	23·58	—	156

	RICKMANSWORTH.				*HITCHIN RURAL.*	
	Ins. 1902.	Ins. 1903.	Ins. 1904.	Ins. 1905.	Ins. 1905.	Wet Days.
January	0·83	2·52	2·43	1·10	1·32	8
February	1·29	1·59	3·28	0·65	0·95	11
March	1·44	2·52	1·26	2·80	2·88	19
April	0·76	3·10	1·35	1·60	2·06	20
May	2·23	1·91	2·71	0·63	1·40	8
June	2·69	5·73	0·98	3·95	3·57	11
July	1·51	3·81	1·68	1·12	1·56	9
August	4·88	2·95	2·01	2·42	3·77	15
September	0·49	1·62	1·60	1·12	2·21	11
October	1·76	6·82	1·45	1·09	1·49	11
November	1·94	1·60	1·52	2·54	2·59	15
December	1·15	2·06	2·08	0·96	0·67	5
Totals	20·97	36·23	22·35	19·98	24·47	143

The following is a record of observations in the Buntingford District for the last 25 years:—

	Total Fall. Ins.	Percentage of Average.	Max. Fall in 24 hours. Ins.	Wet Days.
1880	27·41	114	1·22	157
1881	27·32	113	1·36	186
1882	27·92	116	1·04	193
1883	25·95	107	1·20	169
1884	18·39	77	1·60	138
1885	26·22	109	1·25	169
1886	25·24	105	1·10	166
1887	18·26	76	0·79	150
1888	22·87	94	0·75	178
1889	25·57	106	2·60	165
1890	20·73	86	1·24	171
1891	26·64	110	1·02	212
1892	25·62	106	1·41	171
1893	22·34	92	1·12	168
1894	23·26	96	1·09	203
1895	24·50	101	1·33	165
1896	26·60	110	0·93	177
1897	23·41	97	1·15	177
1898	20·71	85	1·08	170
1899	24·23	100	0·96	182
1900	24·49	101	0·98	178
1901	19·73	82	0·96	134
1902	17·97	74	0·69	161
1903	36·36	150	2·00	201
1904	22·38	93	1·09	201
Average	24·16	100	2·60	174

If one could rely on the unofficial observations recorded in the various reports of the Medical Officers of Health, it would appear that *Rickmansworth*, in the south-west of the County, with a rainfall of 19·98 inches, 4 inches below the average, had a drier year than *Welwyn* with 23·58 inches, *Cheshunt* and *Hertford* with 23·77 inches, *St. Albans* with 24·4 inches, and *Baldock* and *Hitchin* in the north with from 22·25 to 24·47 inches according to three different readings. The heaviest falls recorded are 1·91 inches on August 27 (*Baldock*), 1·79 inches on July 9 (*Cheshunt*), and 1·06 inches on August 28 (*Preston*).

It may be noted that the driest year in the period, 1902, when the fall was 26 per cent. below the average, and the wettest, 1903, when the fall was 50 per cent. above the average, are consecutive. The greatest monthly fall occurred in October, 1903, when 5·93 inches were registered; and the smallest monthly fall in February, 1891, when only 0·01 inch was gauged.

There were 30 occasions on which 1 inch and upwards fell in 24 hours; on two of these it reached 1½ inches, and on two it reached 2 inches. These 30 falls occurred—1 in April; 3 in May; 3 in June; 7 in July; 4 in August; 4 in September; 4 in October; 2 in November; and 2 in December. The heaviest fall of rain was 2·60 inches on July 12th, 1889, the result of a series of thunderstorms; and the heaviest fall of snow was on February 15th, 1900, when 0·98 inch was registered. An absolute drought is a period of 14 days or more without rain. There were 25 such periods during the 25 years, the longest being a period of 30 days from March 17th to April 15th, 1893. There was, however, a period of 34 days from February 1st to March 6th, 1891, during which only 0·01 inch was registered. Snow was registered to the amount of 17·11 inches on 194 days, representing about 3 per cent. of the 25 years' aggregate fall, 604·12 inches.

Source; Method and Legal Powers of Supply.

In the Urban Districts, with the exception of Baldock, the water-supply is provided almost entirely by private companies or by the Local Authorities from deep wells sunk in the chalk. This source yields a pure though very hard water. So long as these wells are properly protected and the reservoirs placed in such a position as to be absolutely free from contamination, there should be no fear of infectious disease being water-borne. It should, however, be understood that leaky water-pipes and fissures in the chalk constitute a danger, and that leaking cesspools in the chalk are especially dangerous, an outbreak, for instance, of enteric fever at the Fulbourn Asylum outside Cambridge having recently been shown to be due to pollution from a hole in the chalk three-quarters of a mile from the waterworks. In laying mains and pipes the greatest care should be taken; the presence of a faulty joint, when a pipe is in proximity to a sewer, or gas-pipe, or passing through made-up ground, is always likely to allow of the entrance of foreign matter to the pipes.

In the Rural Districts the supply is still usually from shallow wells, and in some instances from ponds or ditches.

The following are the chief Statutory Powers of District Councils in the matter:—

Under "The Public Health Act, 1875," and "The Public Health (Water) Act, 1878," certain powers are given to Local Authorities to enforce provision of a wholesome supply of water to individual houses, groups of houses, and villages.

Under "The Public Health Act," the Local Authority can only insist on a supply to a house if the cost does not exceed the water rate authorized by any Act in force in the district, or a rate of *2d.* per week, or such other cost as the Local Government Board may, on the application of the Local Authority, determine to be reasonable.

"The Public Health (Water) Act, 1878," makes it the duty of a Rural Sanitary Authority to see that every occupied dwelling-house in their district "has within reasonable distance an available supply of wholesome water," but, unfortunately, Rural Sanitary Authorities have in the past frequently been so liberal in their interpretation of the meaning of a "reasonable distance" and "an available supply" that the Act has been largely inoperative.

"The District Council's (Water Supply Facilities) Act, 1897," permits landowners, under certain conditions, to charge their estates with money contributed towards the expenses incurred by a District Council for the purpose of supplying water.

The question of the water-supply, not only as regards quality, but also quantity, is one of the most urgent public health problems with which the County Council have to deal. During the past year of good rainfall there were no complaints of serious shortage of water in any district, but until 1903 this had not been the case for many years. However, several of the Urban Medical Officers of Health again write of the inconvenience that is felt owing to want of a constant supply.

The following information is obtained mainly from the various district and special reports of recent years. In these reports reference is frequently made to the progressive fall in water-level throughout the County, often attributed to deep borings made for the London supply. It is important that all the evidence bearing on this point should be collected, and that at the same time accurate observations should be made on the available water-supply in each district. It is to be regretted that the work of recording water-levels throughout the County from the County Surveyor's office should have been set back. Such a knowledge is essential for a general view on which to base a policy for any one District.

District Supplies.

Urban Districts.—1. *Baldock.*—The supply is abundant, but is derived from shallow wells in the chalk. Many of these wells are liable to pollution from the surrounding soil, as has again been found by private and official analyses during 1905, and the District Council recognise that a purer supply is needed. The County Medical Officer held an Inquiry into the matter in December, 1902, and the County Council agreed to defer further action on the understanding that the Urban District Council proposed forthwith to provide a proper public water-supply. A Local Government Board Inquiry was held in 1904 to investigate a site a mile out on the London Road, but sanction for a loan was refused on account of the site being liable to pollution. Two schemes have been under discussion; firstly, one for the town to supply their own water, for which three acres of the western glebe were to be purchased for site of well and reservoir, and secondly, to obtain their supply from works owned by the Garden City Company. The terms offered by the Company were considered extravagant, but the Company has made a new offer and it is believed this is to be accepted. An outbreak of seven cases, one fatal, of enteric fever in 1904 was investigated by the County Medical Officer on October 18th, 1904, and six out of seven cases were found to be probably due to drinking unboiled water from a polluted well. This outbreak was directly attributable to the delay in providing a public supply, and it is to be hoped that the delay will be allowed to continue no longer.

2. *Barnet.*—Barnet Water Company. Intermittent service. No softening process. The Company has sunk five deep wells in the chalk, three at Barnet, one at Potters Bar, and one at East Barnet; in addition the Company obtains a certain quantity of water from the New River Company. Complaints are made of insufficiency, and cottagers are deprived of their supply in a frost through the cisterns being usually placed outside and unprotected. The Medical Officer of Health again draws attention to these defects, and it would be well to enquire into the matter.

3. *Berkhampstead.*—Berkhampstead Water Company. There are a few private wells still in use.

4. *Bishop's Stortford.*—Waterworks owned by District Council. Dr. Thresh, after exhaustive analysis, found the water pure but rather hard. The advisability of softening it has been discussed, and the Medical Officer has reported the question to be one of economy rather than health. A few private shallow wells still in use. Out of four well-waters analysed, one was polluted.

5. *Cheshunt.*—Waterworks owned by District Council; arrangements have been made whereby, should the normal supply fail, a sufficiency can always be obtained from other sources. Some private wells still in use. The non-extension of the mains to Beaumont Green was the subject of a resolution of the County Council in 1904 and of a letter to the District Council, who replied that, as they had previously in 1900 replied to the Local Government Board, the suggested extension was not worth the cost of £80 it would entail. The County Medical Officer visited Beaumont Green on February 14th, 1905, found only two cottages and a small farmhouse still unsupplied from the mains, and these three houses, being without cows or dairy, sufficiently supplied from a well. The District and Parish Councils Committee on March 17th, 1905, decided to take no further action.

6. *East Barnet Valley.*—Barnet Water Company. Intermittent supply. See Barnet.

7. *Harpenden.*—Harpenden Water Company, from deep chalk wells, 250 to 460 feet in depth, near Midland Railway Station, with water-level 145 feet below ground. These give a constant supply, which is at present good, pure, and sufficient; but 20 leaking cesspools exist within 200 yards of the waterworks, as reported in March last year after local inquiry by the County Medical Officer and County Surveyor. The report showed that the structure of these cesspits contravened the local byelaws and the Public Health Act. That they leak is shown by the fact that they require emptying only once in seven years when a cesspool in the clay fills in a year; and as the pools become choked the number requiring to be emptied increases every year. Sore throats are often the

first evidence of a cesspool being full; and the number thus emptied by Merryweather exhaust apparatus has risen from 140 in 1904 to 208. A second exhaust tank is to be bought.

In the main part of the village (including Bowling Alley), there are now less than a dozen private wells in use. Owing to difficulties in carrying the water main over the Great Northern Railway Company's line, that part of Cold Harbour Lane to the south of the Railway Station is still dependent upon shallow wells. To the station itself water is brought daily in cans from Hatfield. At the other end of Cold Harbour Lane the Harpenden Water Company's main was laid in the end of 1903, and early in 1904 notices to close polluted wells were served upon the owners.

No attention appears to have been paid to the Report of the County officials just mentioned; and as the District Medical Officer again insists on the danger of present arrangements it is to be considered whether the County Council shall not take action.

8. *Hemel Hempstead Borough.*—Corporation Waterworks. Some private wells still in use.

9. *Hertford Borough.*—Corporation Waterworks, from four deep wells in the chalk, one sunk in 1904 as a substitute for the shallow well which was liable to pollution; the new well gives a good yield of excellent water. A water-mill, a gas- and a steam-engine, are used to raise the water. Constant service except in higher parts of the town. For this and to increase the storage capacity for Bengeo there is a scheme for a higher tower, at present, however, in abeyance. Numerous private shallow wells are still in use.

10. *Hitchin.* — Waterworks owned by District Council. Daily consumption averages 140,000 gallons. The supply is ample and proved of pure quality by quarterly analyses. An additional reservoir is to be constructed.

11. *Hoddesdon.*—A private Hoddesdon Water Company, from a deep well in the chalk. The water is pumped up into a reservoir and distributed by gravitation. A few private wells are still in use. Negotiations for the acquisition of the waterworks by the District Council fell through, but the Medical Officer hopes that some agreement may be reached.

12. *Rickmansworth.*—Rickmansworth and Uxbridge Valley Water Company, from well at Batchworth. The water is hard (16 points total, 3·5 permanent), but otherwise of good quality. The Medical Officer of Health again urges the drawbacks of a hard water and the need for softening, more for economical than hygienic reasons. Deep and shallow private wells, some only 6 to 12 feet deep, are also in use, but the latter only seldom. 220 new connections were made with the Company's mains during 1904.

13. *Royston.*—Royston Water Company, from the chalk, and two deep wells.

14. *St. Albans City.*—St. Albans Water Company, from the chalk. No softening process is employed, and the water is very hard.

15. *Sawbridgeworth.*—Herts and Essex Water Company, from chalk wells in south of district. The water is pure, and the supply more liberal; but the Medical Officer of Health remarks on the need of a constant supply. Clay Lane is being supplied by extension of mains by the same Company.

16. *Stevenage.*—Supply by District Council from a deep well above the Church. The water is pure and the hardness said to be entirely removeable by boiling. Outlying parts of the District are supplied by private wells. The lack of a permanent supply at a fully licensed outlying public-house is again referred to; and a letter reported to have been written to the Justices.

17. *Tring.*—Chiltern Hills Water Company. Many private wells still in use, but mains have been extended to New Mill.

18. *Ware.*—Waterworks owned by District Council, supplied from two deep wells in the chalk. Analysis shows both satisfactory. The constant supply has occasionally failed to the higher parts of the district, and improvements are contemplated.

19. *Watford.*—Waterworks owned by District Council, supplied from deep wells in the chalk. The water is hard (nearly 19 degrees), and the Medical Officer of Health again urges the dangers and drawbacks of hardness. An electric engine has been installed underground near the pond to increase the water-pressure in the Nascot Wood District. Negotiations are proceeding for the purchase of land with a view to increasing the general water-supply.

Rural Districts.—1. *Ashwell.*—The villages of Barkway (which has a public supply), Reed, and Nuthampstead from shallow wells, and partly from ponds; Ashwell from wells and springs; Barley, Therfield, and Hinxworth from ponds and deep wells; Kelshall from ponds. At Nuthampstead the supply again ran short in the summer, and water was supplied free by water-cart. No further steps have been taken towards a water-supply for Kelshall and Reed, the question of which has been much discussed since 1901. In villages dependent on ponds for their supply, the use of filtering beds is recommended.

A scheme for the sewerage and water-supply of Ashwell village has been much discussed since 1904. The District Council applied to the Local Government Board to be constituted a Special Drainage District for these purposes in March, 1904; the Local Government Board gave

their approval on May 12th, 1904; on June 2nd sanctioned a loan of £250 for sinking a well, being part of the £2,338 required for a water-supply, and on June 6th gave their sanction to a loan for £3,180 for sewerage. On July 13th, however, the Ashwell Parochial Committee recommended to the District Council that the whole question of water-supply and drainage be referred to the Parish Council and to a Parish Meeting. The Parish Meeting was accordingly held on October 24th, and by 109 votes to 4 resolved to ask the District Council that the question be reconsidered. The District Council referred the matter to the Parochial Committee, who reported on December 14th that they wished for time to be given them in which to submit a less costly scheme. A petition praying for a less expensive and less efficient scheme, signed by 82 ratepayers and property owners within the Special Drainage District, was received by the District Council on January 11th, 1905, and was also referred to the Parochial Committee. This Committee appears now desirous of skilled advice on 4 alternative schemes, viz. :— (1) The original scheme of Mr. Elliott; (2) arrangement with the Biggleswade Water Board, 7 miles off; (3) scheme for bringing water from Topler's Hill; (4) purchase of water from a private Company and continued dependence on springs.

The County Medical Officer of Health reported on the subject to the District and Parish Councils Committee after visiting Ashwell in November, 1904. He found that the water-supply was derived from private wells, especially one near the Post Office, some of which were said to be polluted, but mainly from springs into which many of the inhabitants dipped at the upper end of the village. Fordham's Brewery at the lower end taps the water before it issues from the chalk, and this supply is conducted in an iron main, from which the public are allowed to draw at the brewery. The matter is still undecided. A case of enteric fever occurred last year, and it would be well to inquire into the state of affairs.

2. *Barnet.*—Barnet Gas and Water and Colne Valley Water Companies for Elstree, Boreham Wood, Shenley, Ridge, and Totteridge. In Arkley most of the houses are supplied by the Barnet Company.

3. *Berkhampstead.*—Berkhampstead Water Company for Northchurch and Berkhampstead; Chiltern Hills Company for Wigginton and Aldbury. The supply of Wilstone, Astrope, Puttenham, and Long Marstone, long reported by the Medical Officer of Health to be dangerous, is now by the generosity of certain landowners assured. The County Council wrote to the District Council on the subject on October 30th, 1903; and a main has now been laid by the Chiltern Hills Company along the Wingrave Road from Tring through New Mill to Long Marstone, supplying New Mill on the way, with one branch to

Wilstone and another through Puttenham to Astrope. The population thus supplied is under 800, and the cost was originally estimated at £2,000.

4. *Buntingford.*—The several parishes are supplied as follows:—Anstey by public wells and ponds; Cottered and Little Hormead by public wells; Aspenden, Broadfield, Buckland, Great Hormead, Rushden, Throcking, Westmill, and Wyddial, by wells; Ardeley, Meesden, and Sandon by wells and ponds; Wallington by springs from dip-holes by the roadside; and Layston, including Buntingford itself, by shallow wells, all liable to pollution. The need of a public supply for the little town of Buntingford has been emphasized in every Annual Report of the District and County Medical Officers of Health since 1898; and on September 13th, 1904, an Inquiry was held into the matter by the County Surveyor and County Medical Officer of Health, who reported to the County Council on December 12th, 1904. The main difficulty arose in the existence of an 8*s.* rate on an assessable value for the Special Drainage District of only £2,975. The loan of £350 was to be repaid within five years. The work, however, is now in hand; a well 133 feet deep has been sunk in the chalk on rising ground half a mile west of the town. Tested continuously for a fortnight, the water-level remained constant and its quality found by the County Analyst very good, although moderately hard. A reservoir is to be built and mains laid. We shall look to next year's district report for an account of the area supplied.

5. *Hadham.*—Mostly hitherto by shallow wells. At East End, in the parish of Furneaux Pelham, a well 140 feet deep in the chalk gives a pure and plentiful supply. In the parish of Much Hadham, into the water-supply of which an Inquiry was held by the County Surveyor and County Medical Officer of Health on June 3rd, 1902, good progress has been made with the waterworks and the mains are now completed.

6. *Hatfield.*—A deep well belonging to the Marquis of Salisbury supplies the town. Little Heath is supplied by the Barnet Water Company; Essendon by wells adjacent to the River Lee, the water being pumped up to a water-tower in the village; the rest of the district by wells.

7. *Hemel Hempstead.*—Rickmansworth Water Company for Kings Langley, Chipperfield, and Bovingdon, the mains being connected up where practicable. Flamstead is supplied from a deep well by an oil-engine, distributing water by gravitation to tanks in various parts of the village. The rest of the district depends upon wells. Attention is again called to the inadequate supply of Markyate Street, as in several previous years, and it would be well to enquire into the matter.

8. *Hertford.*—Since the report of the District Medical Officer of Health in answer to request of Local Government Board for information on the subject no further action has been taken, except that at Datchworth a deep well at a distance from some of the houses had been procured for public use instead of the pond on the green. In the chief parishes, Aston, Bennington, Datchworth, Walkern, and Watton, the supply is mainly from shallow wells, except in the case of Bennington, where it is from deep wells, and in the case of Datchworth, where it is from rain-water tanks and ponds and from the newly-acquired well. The quantity was sufficient last year, but it is insufficient during periods of drought, the scarcity of water being accentuated by the abstraction by water companies of large quantities along the Lee valley. There is sufficient number of wells readily accessible, except during periods of drought, but owing to the labour involved in obtaining water from draw wells, less is used than were the supply from a tap, and this amongst the poorer classes is detrimental to the cleanliness both of house and person.

The shallow wells are sunk in porous soil in close proximity to the houses. Upon this soil has been deposited for generations all refuse, both household and human. The wells are dry-steined, and no attempt has been made as a rule towards their protection. They are obviously liable to pollution. Rain-water is objectionable unless properly filtered. Deep wells in the chalk are not so liable to pollution, but danger from faults or fissures is always possible. If shallow wells are to be continued they should be protected as far as possible by raising the top of the well a foot or more above the surrounding ground, and by excluding entrance of water through the sides for the first four or five feet. In the case of all new houses this should be insisted upon prior to the granting of the certificate. From a sanitary point of view a public supply is obviously the best means of dealing with the present difficulty.

The District Medical Officer of Health and Surveyor visited Chelmsford and Maldon in Essex, where satisfactory public supplies have been arranged for large rural districts, and prepared a scheme for the Hertford District on similar lines, entailing an expenditure of £18,000 and a rate of 4*d.* in the £1. As no further action has been taken in the matter, it would be well to enquire if any action is proposed, and, if not, to report default.

9. *Hitchin.*—During the eight years drought, viz. 1895 to 1902 inclusive, most parts of the District showed signs of their water-supply becoming very low, and only a few of the smaller villages had no cause for complaint. The year 1903 showed a rainfall of 35 inches; but the springs generally are now again below their normal levels after a rainfall in 1895 of under 24 inches.

The whole of the District, with the exception of a few parts close to the Urban District of Hitchin, is supplied by deep and shallow wells (private and public); and a few hamlets, such as Tea Green and Breachwood Green in Kings Walden parish, are supplied mostly by rain-water collected into tanks beneath the ground-level.

The Garden City Company have bored for water near Pixmore with very good results, have built a pumping-station, supplied power for the pumps, constructed a large covered reservoir, and laid mains to Willian, Letchworth, Norton, and Radwell, giving them an ample supply. Negociations are in progress for the same Company to supply Baldock.

At Clothall, a village situated on a high level, a 200 feet well was sunk and windmill erected to pump water up to cisterns at Quickwood and Clothall Bury. The tank, however, has not sufficient storage capacity to hold a supply for windless periods. This might and should be amended; otherwise the system does not prevent the danger of polluted well-water, which it was designed to prevent.

Weston and Breachwood Green are the two localities with the worst supply. In Weston the main supply is from shallow wells less than 20 feet deep in gravelly clay, very liable to pollution, and from dipping-holes, fed by land springs, which are also polluted. A deep well, 230 feet into the chalk, supplies the Manor House; water is raised by a steam-engine, and there is a standpipe for tenants. In 1903 arrangements were being made for a supply to the village from the prospective Baldock waterworks; but Baldock is now probably going to purchase Garden City water. In Breachwood Green, which is on high ground, a small pumping-station fixed to the deep well already in existence would make a sufficient supply for the whole Green. This inadequacy has been noted in vain for several years by the Medical Officer.

Walsworth is gradually being supplied from the Hitchin Urban Waterworks.

Hexton has many cottages now supplied from the village spring, and each new cottage built will have its separate supply from the park.

Offley is on high ground, and the wells few and deep; the two mostly used by the village are privately owned.

Whitwell, Kimpton, and Codicote, the three chief centres of population, are all supplied by shallow wells 15 to 20 feet deep in the gravel, and these require care to avoid pollution from the soil, which is in proximity to the houses, and must be grossly polluted. This supply cannot be considered safe.

In Ickleford the supply is mainly from shallow wells, and sufficient care is not always taken to prevent soil-pollution; it is partly from river-water, taken at a point which shows undoubted sewage-pollution.

The County Surveyor and County Medical Officer of Health held an Inquiry on December 1st, 1904, into the sewage-disposal of Codicote, Ickleford, and Weston, and in their report to the County Council on March 17th, 1905, the above facts about water-supply were substantiated, and the question of a public supply was shown to be merely one of expense.

It is high time that some definite scheme for meeting the needs of these villages should be undertaken; and it would be well to make enquiry accordingly.

10. *St. Albans.*—Harpenden Water Company for part, and wells for the rest of parish of Harpenden Rural. St. Albans Water Company and wells for St. Stephen and Sandridge, and the same Company for Fleetville in parish of St. Peter Rural, the rest of which—Colney Heath, London Colney, and Hill End Asylum—is supplied by wells, as are Wheathampstead, St. Michael Rural, and Redbourn. In Redbourn the Parish Council have sunk several tube-wells, from which water is raised by pumps. No mention is made of the water-supply in this year's report from the District.

11. *Ware.*—Before the great rainfall of 1903 there were frequent complaints of scarcity, which have not, however, been repeated. In Great Amwell the Metropolitan Water Board have extended their main at Hertford Heath for the supply of Haileybury College, a great improvement over the former supply from shallow wells in the clay. The mains of the Ware Urban District Waterworks supply London Road and Mount Street. Broxbourne and Wormley now have a good supply of their own from a well at Broxbourne, instead of their former supply from Cheshunt. Eastwick is supplied by tap from a spring; Gilston, Hunsdon, Great Munden (with a deep well at Nasty), Standon (shallow for Colliers End, Puckeridge, Standon, and Wadesmill, deep for High Cross), Thundridge, Ware Rural, and Widford by wells; Little Munden by public deep wells (with a deep well at Haultwick), and Stanstead Abbotts by tube-wells in the chalk. There is no information concerning the parish of St. Margarets.

12. *Watford.*—The District is on the whole well supplied by the Colne Valley Company, the Rickmansworth Company, and the Hemel Hempstead Borough Waterworks.

13. *Welwyn.*—The former most unsatisfactory supply has been replaced by a comprehensive scheme under the District Council. Thirty-nine premises have already been connected with the mains, 11 standpipes erected, and proper flush-tanks can now be installed for the many closets hitherto only flushed, if at all, by hand.

DRAINAGE AND SEWAGE-DISPOSAL.

In 1903 the County Council requested all District Medical Officers of Health in the future to report fully as to the means adopted by their respective authorities for the treatment of sewage, and as to the efficiency of the same. Many of the reports for 1905 deal fully with the subject, but in some instances it would be of great advantage to have more information.

All the Urban Districts, with the single exception of *Harpenden*, are now provided with sewerage systems. In *Rickmansworth* the new system was inaugurated on March 7th, 1904, and half the District was connected up within the year. At *Sawbridgeworth* a comprehensive scheme has been prepared, but is delayed pending the decision of the Local Government Board after their Inquiry held in 1904.

In the Rural Districts very few villages appear to have any satisfactory sewerage system, and the existing arrangements for the disposal of excreta are far from sanitary. Earth-closets, when properly constructed and attended to, are amongst the best and most suitable contrivances for use in Rural Districts, and should be productive of no nuisance. Unfortunately, the privy pit and cesspool are still in very general use.

The general question in the whole Eastern side of the County was raised in 1905 by the proposal of the Metropolitan Water Board to purify the Lee and the Stort. It was represented to them that London was drinking 30,000,000 gallons of water a day from these rivers, and that this was polluted by 2,000,000 gallons a day of sewage. They proposed, therefore, to remove their intake from Ponders End, below Waltham Cross and Cheshunt, 8 miles up the river to Feildes Weir, and to construct a main intercepting sewer from Bishop's Stortford to take the sewage of all places along the valley on the east side of the County down to Nazeing, in Essex, a mile from Broxbourne and Hoddesdon. The cost of the sewer, £125,000, was to be borne by the Board, but the cost of connecting up existing sewerage-systems to the sewer was to be borne by the Local Authorities.

The County Council entered into negotiations with the Water Board to secure an adequate flow over Feildes Weir, and protection for the District Councils concerned.

In the opinion of the Hertfordshire County Council the guaranteed flow over Feildes Weir of only 5,000,000 gallons a day would have reduced the river to a stagnant and in hot weather a very small stream; navigation would have been imperilled; and it seemed wholly unjust to demand that Hertfordshire should pay for the purification of London's drinking-water.

When the Bill was introduced, it was found that the Board recognised the principle of expenditure, necessitated by the use of Lee-Valley water for drinking purposes, falling upon the Water Board and not on the Local Authorities. But on March 23rd, 1906, the Clerk of the Board wrote to the Clerk of the Herts County Council informing him that parts of the Bill relating to sewage-disposal were to be withdrawn, "so that the matter may receive further consideration in the "light of recent developments."

On May 4th representatives of the County Council and of the District Councils concerned met in conference and resolved:—"That "the President of the Local Government Board be asked to receive "a deputation from the Hertfordshire County Council to explain to "him that the various Local Authorities are quite prepared to carry out "such works of sewage-disposal as the Board may consider to be "necessary, and that if necessary they are quite prepared to bear their "fair share of the cost of any such works, provided the Metropolitan "Water Board bear any portion of the expense involved in bringing an "otherwise good effluent up to the standard which should render the "water of the River Lee a source of water-supply for London beyond "suspicion."

It is understood that the President of the Local Government Board has asked the Water Board whether they are prepared to contribute towards the cost of sewage-disposal works in the valley of the Lee, and particularly in the case of Sawbridgeworth.

The County Council are arranging for a conference with the Lee Conservancy Board upon the subject with a view of asking the President of the Local Government Board to receive a joint deputation.

It appears that the eminent expert attached to the Water Board as examiner found the Lee filtered water "pure and of good quality, and "the East London supply, consisting mainly of filtered Lee water, "contained less organic impurity than any of the Thames-derived "supplies." Nevertheless, from the point of view of London it is manifest that the system is dangerous; it is astonishing that the greatest city in the world should be content to drink even well-filtered sewage-effluent and well-water derived from areas densely inhabited. Sir Alexander Binnie points out the analogy with Hamburg, which in 1892 was suddenly visited with an epidemic causing 18,000 cases of cholera and 8,000 deaths; and strongly recommends the obvious scheme for getting 2,000,000 gallons a day from Wales, after the example of many modern cities like Manchester, which went 200 miles to Thirlmere, and many cities centuries ago such as Rome.

A parallel question has arisen this year on a smaller but, for Hertfordshire, hardly less important scale, over the Middlesex County Councils' General Powers Bill. Our neighbours sought powers to purify all streams passing through their County, even to a distance of 1,500 yards beyond their boundary. It seemed to the Hertfordshire County Council that it was their business, and not that of an outside Authority, to purify their own streams. Attention was concentrated more especially on two small streams, Pymme's and Dollis' Brook, which cross the County boundary more than once in the Barnet districts, and flow across Middlesex into the River Lee. After a hard fight before a Committee of the House of Commons in May of this year, this clause was omitted from the Bill.

Local Systems.

The following particulars are mainly derived from the annual district reports of recent years.

Urban Districts.—1. *Baldock.*—Hopper-closets flushed by hand. Main sewer connections, not extended last year. Sewage-farm of 10½ acres to north of town; subsoil chalk. The sewage is received into a tank; from there it is raised by revolving buckets to highest level of farm. No precipitant is used, and no attempt made to remove the sludge. The land is deep-trenched and vegetables grown on the ridges; the farm is let to a tenant. More systematic working of the ground seems necessary.

The main sewers were laid about 35 years ago; in their whole extent they lie in the chalk. There is no doubt that the joints between the pipes are largely inoperative. In Hitchin Street the drains of several houses have been laid open and found seriously defective, accounting for great general pollution of the soil. Regular flushing is carried out as effectively as is possible in the absence of a public water-supply. Very few complaints of nuisances were received last year.

2. *Barnet.*—Closets connected to main sewers. Irrigation-farm of 56 acres situated on clay soil in parish of Arkley, just south of the Urban boundary. Precipitation-tanks are used, and a portion of the land under-drained.

3. *Berkhampstead.*—Closets connected to main sewers. A new septic tank has been built, and is now in working order. Works have been undertaken at the outfall for the better treatment of sewage. The beds are working well, and a very good effluent is obtained.

4. *Bishop's Stortford.*—Closets connected to main sewers, which are extended from time to time. The sewage is carried by gravitation to a farm 1½ miles distant in the Stansted Rural District, where it is

pumped on to the farm, and treated by broad irrigation. Much subsoil-water finds its way into the sewers, and adds to the difficulty and cost of maintenance. This would have been remedied by the proposed scheme of the Metropolitan Water Board.

5. *Cheshunt.*—Closets connected to main sewer, begun in 1884. Drainage badly done in first instance. Pumping-station (sewer 14 feet below ground). Sewage-farm never properly worked. In 1903 a scheme for precipitation-tanks and shallow filters was proposed, half of which have been constructed and been in use. These shallow filters, however, have not proved a success; and it is now decided to construct tanks for coarse upward filtration, with subsequent distribution by sprinklers over aërating beds, and thence by intermittent flow on to land purchased and being prepared for the purpose.

A laundry effluent was last year, on complaint from the Lee Conservancy, discovered and turned into the District Council's sewer.

6. *East Barnet Valley.*—Complete sewerage; closets nearly all connected to main sewer; few cesspools. Broad irrigation on farm of 50 acres within 1,500 yards of southern county boundary. Effluent is further treated on breeze filters before being passed into Pymme's Brook. Party walls of beds are now made of solid concrete.

Since District report was received, in May, 1906, a fresh field lying higher than the rest of the sewage-farm has been opened, at an initial cost for sewers, engines, machinery and buildings, of £5,940, to take the sewage of the Brunswick Park District, the sewage being pumped up on to it. From here it has to percolate right under the rest of the farm before reaching the filters; but some of the lower-lying parts of the farm, with only two or three feet of soil over the clay, can hardly afford as good treatment as might be wished. The position of the filters and the drainage of some low-lying patches also leave something to be desired. But the effluent is reported to be good, and it certainly seemed good on a recent visit of County officials in April. The District Council have decided to watch the quality of the effluent by periodical analyses. It would be well for the County Council to ask for detailed information as to the results obtained.

7. *Harpenden.*—Water-closets connect to cesspools, which are emptied by Merryweather exhaust apparatus. Pail-closets and privies are also in use. The former, serving cottage property, are emptied twice a week by a contractor to the Council, and the contents disposed of on farm-land.

On account of the proximity of many cesspits to the wells of the waterworks, this system, always dangerous in a growing urban population,

is intensely dangerous in Harpenden, and should be abolished. The question has been dealt with in detail under "Water-supply" (p. 81). The County Officers, after their Inquiry in 1904, reported "that the Urban District Council of Harpenden have not caused to be made such sewers as are necessary for effectually draining their District," and "that 'The Public Health Act, 1875,' has not been properly put in force within the said Urban District of Harpenden." Copies of the report were last year sent to the Harpenden Urban District Council and Water Company. It would be well to enquire what is being done, with a view, if necessary, to reporting defaults.

8. *Hemel Hempstead Borough.* — Further connections have been made, and most properties are now connected to the new sewer. Sewage is pumped into settling tanks on the farm, no precipitant being used. From the tanks it is run on to the land and treated by irrigation. The sludge is periodically cleared from the tanks and dug into the farm. The subsoil is chalk.

9. *Hertford Borough.* — Closets connected to main sewers. The sewer in Mead Lane has been relaid for property developing along the Ware Road; a new surface-water drain is to be laid in Cowbridge, and new streets continue to be laid out and sewered. A loan of £27,000 was sanctioned by the Local Government Board in 1904 for extensive alterations to the sewage-works, which, leased formerly to the East London Waterworks Company, have now passed into the hands of the Metropolitan Water Board. Owing to the Lee Valley Drainage scheme nothing further has been done. After chemical treatment the sewage discharges into the River Lee at Ware.

10. *Hitchin.*—Closet and other house drains are connected to the sewers, 100 new houses having been connected and several lengths of new sewer laid during 1905. A main sewer, laid in 1848, has undergone various alterations and extensions. Storm-water is excluded, but the sewage becomes much diluted owing to the defective jointing of the remaining portion of the original sewer, which was laid in the bed of the river. Sewage-farm of 22 acres to west of railway-line beyond Hitchin. Day-sewage treated in open tank with alumino-ferric precipitant, effluent being then filtered and passed on to the land, of which some 2½ acres are used daily. Sludge is cleared out of the tank once or twice a week and sold, when possible. Another filtering tank of large dimensions has been added, but the farm is often taxed to its utmost capacity. The Medical Officer suggests that the night sewage, amounting to 50,000 gallons, in a very dilute state, owing to leakage of river-water into the sewers, be allowed to flow into some disused settling tanks,

filtered and passed direct into the river. He reckons that the dilution is considerably greater than the one in six required for an effluent.

11. *Hoddesdon.*—Closets connected to main sewers. Considerable attention was paid in 1905 to the farm at Rye Park, on which sewage is treated by broad irrigation. Part of the farm has now been laid out in beds; a new intercepting bank of puddled clay was made in 1904, by which certain difficulties introduced by storm and subsoil water are avoided, and tanks have recently been constructed to intercept the sludge. A summons by the Lee Conservancy Board against the District Council for pollution of a neighbouring ditch was dismissed by the magistrates.

12. *Rickmansworth.*—New sewerage and drainage system, to which 543 more houses, making 1,204 in all, including all the elementary schools, have been connected up. Only 100 remain to be connected up. These works were begun in 1901 and completed by the end of 1903. The sewers, of stoneware above and cast iron below the level of the subsoil-water, empty by gravitation into an underground tank of 50,000 gallon capacity at Batchworth, sufficient to hold the night-sewage. The bottom of this tank is 30 feet below the level of the River Colne close by; its floor, 4 feet thick, and its walls, 3 feet thick, are watertight. A small pumping station in the low-lying locality of Mill End pumps the sewage of that part up to the Batchworth tank. Duplicate pumps, driven by 22 horse-power gas-engines, each capable of raising 15,000 gallons in the hour, pump the sewage from the tank on to high ground near Woodcocks Hill, to be passed through septic tanks on to 14 acres of suitable land. A complete installation, provided for flushing sewers and watering streets, failed at first through leakages from the pipes; but this has been remedied. Very few blockages have occurred during the year, and the system has worked admirably, all new connections being tested first with water and then with smoke before being used.

A few complaints as to smell have been satisfied by the erection of more ventilating shafts and more adequate flushing.

The contract for weekly emptying of pail-closets and privy cesspits expired in September, but had to be continued to the end of the year.

13. *Royston.*—Water-closets connected to main sewers. Pit-privies, earth-closets, and cesspools in some outlying parts. Sewage is disposed of on a farm, which has been in use many years. A tender has been accepted for laying out the 16 acres of fresh land, acquired for broad irrigation, and for the construction of an outfall sewer. The Local Government Board has given its sanction to a further loan of £200 to complete the works. Twenty-three old houses have been connected up

with the sewers, and the corresponding cesspools have been abolished. Of 18 new houses, 3, being outside the sewerage-area, depend on water-closets emptying into cesspools; the others are connected to the sewers.

The surface-water over part of the town is treated separately.

Outside the sewerage-area refuse from earth-closets is disposed of on garden ground.

14. *St. Albans City.*—Closets connected to main sewers. The few remaining pail-closets are gradually being abolished. Sewage-farm between St. Albans and Park Street. Septic tank, then bacteria beds (first coarse, then fine), and finally irrigation on sewage-farm.

15. *Sawbridgeworth.*—Much of the sewage is dealt with by water carriage to the sewage-farm. There are also many cesspools and privy cesspits, which are emptied by the owners of the property, but the system is most unsatisfactory.

Plans for drainage and bacterial treatment were prepared, and sanction for a loan of £10,500 asked of the Local Government Board, who held an Inquiry in 1904. They have not yet given their decision. The District Medical Officer considers that the scheme of the Metropolitan Water Board would be of inestimable benefit to Sawbridgeworth; but, as it would take six years for completion, he considers the sewage of the south part of the District should be treated meanwhile.

16. *Stevenage.*—Sewage-farm, broad irrigation; has worked well.

The scheme for laying a new surface-water drain and filling in the old brick sewer and weir-pond seems to have come to a standstill. The Medical Officer again draws attention to this defect; and it might be well to make enquiry.

17. *Tring.*—Closets connected to main sewers. Many of the closets are still hand-flushed. Sewage-farm. The sewers in the lower part of the town have been relaid, and storm-water partly diverted from them. It is proposed to relay the sewers in the upper part of the town, which leak badly, and to divert the whole of the storm-water, thus rendering treatment at the outfall less troublesome. There are still too many hand-flushed closets.

18. *Ware.*—Closets connected to main sewers. The sewage is carried to Stanstead by gravitation, and thence pumped on to a farm at Rye House, 3 miles from Ware on the Hunsdon Road. Treatment by broad irrigation on farm of 130 acres, 100 of which can be used. Method of flushing sewers direct from water-main without intervening cistern is dangerous to health; representations have been made to the District Council, but no mention is made of any change in this year's report and the system presumably remains unchanged.

The Metropolitan Water Board proposed to take the sewage into an intercepting sewer and treat it on their proposed farm near Nazeing in Essex.

19. *Watford.*—Closets connected to main sewers. In the older parts of the town many of the sewers were laid without manholes, and many houses possess no inspection chamber, and are not cut off from the sewer by any intercepting trap. In the new part of the town difficulty exists in regard to the drainage of Callow Land, owing to want of fall in the sewers. The chief difficulty is in combined ownership of insanitary property. In 1905 many house drains were inspected and found by the smoke test defective. Some defects have been remedied, but here again combined owners of property have failed to comply with notices served on them, and will continue to do so until the Council takes a case into court and gets a conviction.

The town sewage arrives at the pumping station and sewage-farms at several different levels, and is discharged on the farm by compressed air through Shone & Ault's ejectors, and improved compressors to give a higher air-pressure are again recommended to prevent sludge being deposited in the settling tanks. This is included in a scheme for improving the Cassio Bridge drainage, which has been passed. If this is completed during 1906, the entire sewage of the town will be delivered from the sewers straight on to the farms. The sewage is treated by broad irrigation at Holywell (133 acres) and Cassio Bridge (120 acres) farms. Altogether about 156 acres of these lands are available for sewage-disposal. The soil is of a very gravelly nature, and the subsoil chalk; consequently the land absorbs a large quantity of sewage without getting waterlogged.

Rural Districts.—1. *Ashwell.*—No system of sewerage in District; in some villages drains are provided to which the house-drains connect, and these discharge into the watercourses. In most villages there are pit-privies; these are being gradually replaced by earth-closets. The contents of both are disposed of on garden ground.

The village of Ashwell was in March, 1904, constituted a Special Drainage District by resolution of the District Council, and a scheme for sewerage and water-supply, although sanctioned by the Local Government Board, is still under discussion. There was some misunderstanding between the Parochial Committee and the Rural District Council; and in the end amended plans and estimates were presented for carrying out that part of the sewerage-scheme which embraced the High Street from Mrs. Sale's to "The Three Tuns," thence to Hodwell by Carter's Road to the Post Office, and from Mill Street to the Elbrook Cottages. It would be well to enquire as to the progress of affairs.

At Therfield the Medical Officer reported on June 13th and August 9th as to the unsatisfactory method of sewage-disposal. He found that the conduits, drains, and ditches in the village were being used as closed or open sewers, that the drains and cesspools, especially at the back of a bakehouse and of an inn, were in a foul state, and many backyards and premises were giving rise to a considerable nuisance. Piping of the drains, cleansing and levelling of the ditches, and interposition of a filter between drain and ditch, partly by private owners, partly by the Local Authority, were recommended by the Medical Officer, and with one exception passed by the Therfield Parish Council in November, 1905.

2. *Barnet.*—A scheme of sewerage and sewage-disposal for the village of Arkley was approved by the District Council, and is being undertaken by the Council of the Urban District, to which Arkley has been transferred. The villages of Elstree and Boreham Wood have efficient systems of sewers. The Boreham Wood sewers have been continued up Drayton and Brownlow Roads. Great improvements have been undertaken at the outfall, and further land is to be acquired.

The Medical Officer of Health repeats his strong opinion that a comprehensive scheme of drainage should be provided as soon as possible for the village of Shenley. It would be well to enquire whether any steps are being taken to this effect.

3. *Berkhampstead.*—The village of Northchurch is sewered under a combined scheme, and there is a sewage-farm. The effluent has been much improved by considerable works at the outfall. Long Marstone has for long engaged the attention of the Authority; and a scheme has been prepared and submitted to the County Surveyor for his opinion.

4. *Buntingford.*—The sewage of the town of Buntingford is treated by broad irrigation on a gravelly soil, planted with osiers at the south-west limits of the town near the railway-station.

Pail-closets and privy-pits still prevail in the villages.

5. *Hadham.*—The sewage-farm at Much Hadham is worked on a system of broad irrigation. It is near the river to the south of the village. At Braughing the storm-water and sewage will in future be carried in separate pipes.

6. *Hatfield.*—In Little Heath there is no sewerage, and there has been much discussion of the subject. The Hatfield Rural District Council were unable to come to terms with the Rural District Council of South Mimms for a share in their sewage-farm, and proposed therefore to acquire a site compulsorily in the South Mimms District. This was

the subject of an Inquiry on February 1st, 1905, by the Local Government Board; which has since held two further Inquiries. There has been much discussion of rival schemes in the press, but it is believed that an arrangement will be shortly arrived at with South Mimms.

The sewage of the Hatfield Special Drainage Area is dealt with under a contract with the Marquess of Salisbury; the sewage-farm is satisfactorily worked on a system of irrigation, but the sewerage and drainage of the lower part of the town is unsatisfactory. In New Town, Hatfield, the sewerage and drainage are satisfactory; the sewage-farm is leased to a tenant and worked upon an irrigation system which might be improved. In other parts of the District the sewage is generally dealt with on the cesspool or pail system.

7. *Hemel Hempstead.*—The new sewers at Kings Langley are completed and the Medical Officer urges compulsion for the provision of suitable water-closets and flush-tanks, which are in many instances wanting. It is again reported that Markyate Street requires the attention of the District Council, and it would be well for the County Council to enquire into the matter.

8. *Hertford.*—Part of the village of Watton-at-Stone is sewered, and the sewage treated by broad irrigation. The old brick sewer down the main street has been relaid for 100 yards and two storm-water gullies trapped.

The sewage of Walkern is also treated by broad irrigation on land a mile south of the village, and the improvements noted last year are satisfactory.

The farm at Hertford Heath, now controlled by a sub-committee of the District Council, has shown improvement.

9. *Hitchin.*—The County Surveyor and County Medical Officer of Health held an Inquiry at Hitchin on December 1st, 1904, into the sewage-disposal of Codicote, Ickleford, and Weston, and made a personal inspection of the parishes concerned before presenting their report to the County Council in April, 1905. Reference to this Inquiry has already been made in dealing with the water-supply; see p. 88. As reported by the District Medical Officer of Health in several recent years, (1) in Codicote a northern system of sewers, laid 20 years ago, discharges into an open ditch and gradually evaporates and percolates away; a southern system, laid in three sections in 1866, a few years later and 4 or 5 years ago respectively, discharges into sumpt-holes in the chalk, which are occasionally cleared out; many house-drains on the east empty through short lengths of sewer by an open ditch into a field; the soil around shallow wells, used for drinking water, must be grossly polluted, and the underground water must be contaminated from the sumpt-holes in the chalk. It is proposed to lay

a new sewer for Newtown, and drain all the houses to an outlet in a private meadow, a septic tank being provided to separate sludge from effluent, which will soak away into chalky subsoil. (2) In Ickleford, a main sewer south of Upper Green discharges into a cesspool, and may overflow into an open ditch; another, north of Upper Green, relaid in 1902, empties into an open ditch and in wet weather discharges into the river; sewers on the east empty directly or indirectly into the river; the sewers receive slop-water, and probably only two or three connections to water-closets; and a general sewerage scheme was recently abandoned on account of cost. The main sewer, north of Upper Green, has been now piped for another 20 yards, beyond the last house in the village, before becoming an open ditch. The few houses in the middle portion of the village are to treat their own sewage by the double tank or other simple system. The sewage of the third portion of the village, Mr. Priest's cottages, is treated separately, the slop-waters flowing into a large tank, from which, when full, it overflows into an open ditch, which does not, however, reach the river. A further tank is to be interposed to catch the sludge of this effluent. (3) In Weston, there are few cesspools, no general system of drainage, and slop-water and refuse are frequently thrown into the nearest ditch, so that the shallow wells for drinking water are polluted; but land can be found for the disposal of slop-refuse without any need for a general scheme of sewerage, and portions of the open drains receiving house-refuse have been piped. The sewer in Hitchin Lane has been now relaid, and carries the sewage away to the north. A sewer has been carried from the back of Mr. Boot's cottages in Fore Street to join the sewer in Maiden Street, and Mr. Pryor has allowed his meadow at the back to be used as gardens. The Maiden Street sewer has been extended 20 yards before becoming an open drain. The middens at the schools have been reconstructed on Poore's system.

Willian has been reached by a half-mile extension of the Baldock sewer, and new water-closets have been provided. The Garden City Estate has been well but temporarily sewered for the parishes of Norton, Radwell, Letchworth, and Willian. At the latter new water-closets have been provided. The effluent is treated by broad irrigation. Kimpton has a sewerage scheme in working order, with broad irrigation over a farm of two acres. Minor improvements have been effected. At Whitwell the main sewer, relaid in 1902, is freely flushed at its origin in the watercress-beds, and flows out into a water-course on the east. Effluent at the outlet of the sewer has been found purer than at the inlet.

The small villages, Bygrave, Caldecote, Clothall, Hexton, Holwell, Langley, Lilley, Newnham, Preston, Shephall, and parts of other villages are mostly provided with insanitary middens possessing a closed receptacle

below ground-level. They are emptied once or twice a year, but are often in bad repair, communicating freely with the surface-water outside; and yet similar middens continue to be provided for new houses. Sink and house-refuse are disposed of either on an adjacent garden or in dumb-wells, wrongly called ashpits, or in unfloored cesspools with cemented sides. Earth-closets and Poore's improved midden have been substituted where possible.

The larger villages, such as Graveley, Offley, Pirton, and Wymondley, like Weston, use an open ditch for the reception of sink and house-refuse, overflow from dumb-wells, and road and storm water; and the sewage is untreated. It would be well to enquire what is being done in these villages.

10. *St. Albans.*—Harpenden Rural is almost entirely served by dumb-wells, emptied by owners; Redbourn, every dwelling of which has an earth-closet, by dumb-wells emptied by a man employed for the purpose, and a nuisance from one of the dumb-wells, complained of by the Thames Conservancy Board, has been remedied; St. Michael's Rural, by dumb-wells for slop-water, emptied by occupiers. In St. Peter's Rural, enquiries are being made as to the purchase of land for a sewage-outfall; Fleetville has dumb-wells, emptied by owners, a few earth-closets, and a water-closet for nearly every house; Colney Heath, dumb-wells, privies, and earth-closets; London Colney, privies and earth-closets and a main sewer, emptying into a brick and cement tank, which is emptied from time to time; and Hill End Asylum has its own septic tank. St. Stephen's has dumb-wells, emptied by owners; with privies and earth-closets; Sandridge, dumb-wells emptied by owners, earth-closets emptied by contract, and a sewer which runs into a ditch; Wheathampstead was reported on by the District Medical Officer of Health to the Local Government Board in 1904 in consequence of seven cases of diphtheria notified in 1903; the village itself is served by two sewers, uniting into one, running to a sewage-farm, and part of the sewer has an insufficient fall or actually rises, so that it is always half-full of stagnant sewage, and the outfall-tanks are not watertight; outlying parts have privies, earth-closets, and dumb-wells, the latter in a low-lying part of the District causing general pollution of the soil.

In view of the continuance of infectious disease at Wheathampstead, it would be well to inquire what steps are to be taken to remedy the state of affairs there and throughout the District.

11. *Ware.*—In most villages there are privies and earth-closets.

The sewage from Stanstead Abbotts is pumped on to a farm on the Hunsdon Road, where it is satisfactorily treated by broad irrigation. The new bank has been made and will prevent any of the effluent gaining

access to a neighbouring ditch. The Broxbourne sewage is treated by broad irrigation. The farm is now under the direct control of the Council. The Wormley Sewage Farm is worked by the Council on a system of broad irrigation. The Hunsdon sewage (slop-water only) is satisfactorily treated by filtration through gravel. Haileybury College has a system of earth-closets. Hertford Heath (that part in Ware Rural) has a sewer discharging on to Hertford Rural farm.

12. *Watford.* — Aldenham, Radlett, Letchmore Heath, Elstree, Abbotts Langley, and Hunton Bridge are all sewered, and sewers are to be constructed for a new building estate at Theobalds Street. At Abbotts Langley continuous filters have been provided, and the outfall improved. A sewer is to be carried to Nash Mills. Trowley Bottom has been sewered and a pumping-station will raise the sewage to the Abbotts Langley outfall. At Bushey an experimental continuous filter has proved satisfactory, so long as it is not overworked. New works will now devolve on the new Urban District Council.

Chorleywood calls for serious attention, and a special report to the County Council in 1905 showed grave defects in the cesspools, the unsuitability of the gardens, mostly lawns, for the treatment of their contents or those of earth-closets or of slop-water, the frequency of nuisances, the growing character of the locality for residential purposes, and the need of a comprehensive scheme of sewerage. The District Council considers that by a new system of scavenging the main defects will be remedied ; but it is difficult to see that this will touch the point at issue. The matter is under consideration by the County Council.

13. *Welwyn.* — The town of Welwyn is sewered, and there is a sewage-farm. Works are being undertaken to provide a more satisfactory effluent. The sewage will be pumped on to land some way from the town and can there be satisfactorily treated. The provision of a water-supply will improve matters.

DISPOSAL OF HOUSE-REFUSE.

Efficient scavenging arrangements play an important part in the prevention of disease, and it is generally desirable that Local Authorities should themselves supervise the work of refuse removal in the towns and larger villages. In sparsely populated Rural Districts the work is naturally left to the occupiers, but frequent inspection of cottage property is required to prevent the common practice of depositing all kinds of refuse in a heap near the dwelling. House-refuse and slops contain a large amount of decaying animal and vegetable matter and urine, and form especially a breeding-place for flies, which probably play a far wider part in the propagation of disease than has hitherto been suspected.

Moreover, without frequent collection of refuse and inspection especially in the poorer districts, much is put into the water-closets, which tend thus to become blocked and a danger to health. Premises also become littered, dirty, and insanitary. Owners of property and Sanitary Inspectors should visit houses and cottages of this class frequently. In the removal of refuse it is obvious that dust-carts should be covered to prevent scattering of their contents especially on a windy day.

Several of the Urban District Reports note the need for more frequent removal of refuse, and for the use of covered carts in order to avoid unnecessary nuisance in the process.

The following account gives approximately the method adopted in each district. It is hoped to make this complete in a year or two.

URBAN DISTRICTS.—1. *Baldock.*—Scavenging is regularly carried out, especially in the upper part of the town. Refuse boxes not always insisted on. The poorer cottages require frequent attention in this respect.

2. *Barnet.*—Weekly collection by Urban District Council; refuse dealt with on sewage-farm. Byelaws as to removal.

3. *Berkhampstead.*—

4. *Bishop's Stortford.*—Collection by Urban District Council; refuse-tips on brickfields. Provision of suitable ashbins is to be enforced.

5. *Cheshunt.*—Fortnightly and now in four summer-months weekly collection by contract. Need for revision of byelaws as to nature of ashbins.

6. *East Barnet Valley.*—Weekly collection by Urban District Council.

7. *Harpenden.*—Bi-weekly emptying of 260 pail-closets and weekly of dust-bins over most of District by contract.

Houses outside village have applied for similar service; but by the original intention of the scheme only houses were to be served that had small back-yards and insufficient garden ground for the disposal of their closet-refuse.

8. *Hemel Hempstead Borough.*—

9. *Hertford Borough.*—Collection by Borough Council, supervised by Borough Surveyor.

10. *Hitchin.* — Systematic collection by District Council in part; elsewhere refuse disposed of by householders on allotments. Much house-property of the poorer class requires frequent attention.

11. *Hoddesdon.*—Collection by Urban District Council.

12. *Rickmansworth.* — Collection by contract; collection by the District Council would be preferable. It is again for the third year in succession recommended that covers be provided for the dust-carts. It would be well to enquire into the matter.

13. *Royston.*—Collection by District Council, under supervision of Surveyor.

14. *St. Albans City.*—Collection by Corporation, in some central parts daily, in some others only every two or three weeks. A bi-weekly collection is urged, and covers for the dust-carts. The erection of a destructor is again suggested, nuisances having been complained of as arising from the City refuse-pits, around which a considerable population is growing up. Compare No. 19, Watford. Enquiry is advisable.

15. *Sawbridgeworth.*—Bi-weekly collection by contract.

16. *Stevenage.*—Weekly collection by contract. Refuse is burnt on sewage-farm.

17. *Tring.*—

18. *Ware.*—Weekly collection by District Council. The Medical Officer again recommends that suitable ashbins should be prescribed.

19. *Watford.*—Collection by District Council with 5 covered vans, now extended to New Bushey area. Destructor, opened in 1903, has destroyed every week nearly 160 tons of refuse, including 284 dogs (35 from the river), 85 cats, 4 carcases of cows, a sheep and a goat. Six men are employed in 3 shifts at $6\frac{1}{2}d.$ per hour. Repairs during the year cost £10; and the saving effected through the use of steam generated by the Disinfector amounts to 625 tons of coal.

Rural Districts —1. *Ashwell.*—By occupiers in ashpits and then on gardens. Systematic scavenging for larger villages again suggested.

2. *Barnet.*—

3. *Berkhampstead.*—By occupiers.

4. *Buntingford.*—By occupiers.

5. *Hadham.*—By occupiers.

6. *Hatfield.*—In Hatfield and Little Heath by contract, elsewhere by occupiers on gardens or allotments.

7. *Hemel Hempstead.*—

8. *Hertford.*—By occupiers.

9. *Hitchin.*—By occupiers, mostly into ashpits in ground. Cottages require instruction to dispose of rubbish and not to collect it. High-bricked ashbins and insanitary garden-holes are too common; so also are wrongly-constructed and tumble-down middens.

10. *St. Albans.*—

11. *Ware.*—In most villages by occupiers. Broxbourne and Stanstead Abbotts were the subject of special inspection and report in this respect in 1904 by the District Medical Officer of Health at the request of the Local Government Board; present arrangements were found unsatisfactory both to the better householders and to the farmers who remove the refuse; while the collection of refuse on the present lines from cottage-gardens was a serious danger to health; and the adoption of a proper system of scavenging was advised. Both parishes, however, have intimated their satisfaction with present arrangements. The case demands further enquiry.

12. *Watford.*—Weekly collection in Abbotts Langley, Radlett, and Elstree, in the hamlets of Trowley Bottom, Hunton Bridge, and Primrose Vale, and by the Council's own men in Bushey Rural.

13. *Welwyn.*—

HOUSING.

Several important modifications in the Housing Acts have been made by "The Housing of the Working Classes Act, 1903." Under this new Act, the maximum period for repayment of a loan raised for purposes of the Housing of the Working Classes Acts is extended from 60 to 80 years. The procedure for confirming an improvement scheme is considerably simplified. And, by an amendment of the procedure for obtaining a closing order, it is no longer necessary for the Local Authority to first serve a notice on the owner or occupier of the premises to abate the nuisance.

Only a few of the Rural District Councils appear to have so far adopted byelaws in respect to new buildings. It is to be hoped that the remaining District Councils will carefully consider, with a view to their adoption, the Model Byelaws for Buildings in Rural Districts issued in 1904 by the Local Government Board.

Allusion has already been made (p. 17) to the Garden City Company, who are endeavouring, with some success, to solve some of the chief housing problems on broad principles, combined with care and novelty of detail.

The following defects have been noted or action taken :—

URBAN DISTRICTS.—*Baldock.*—Much undesirable cottage property, but nothing has been done in the matter

Bishop's Stortford.—The District Council has insisted on flushing-cisterns for all indoor water-closets. Some back-yards have been paved, and 58 new houses have been built.

Cheshunt.—One house closed, and one made fit for habitation at great cost on threat of legal proceedings. The provision of houses for workmen, much under consideration, is of less importance, as there are several vacant houses, and the progress of the nursery industry seems checked by difficulty in finding suitable land.

Harpenden.—Back-yards and areas are kept in a very insanitary state, littered with animal and vegetable refuse, and improperly paved. Gully-traps and water-cisterns are often found in a foul state. Byelaws for the paving of back-yards are recommended.

Hertford.—Provision of a suitable cattle-market is under discussion. If a site between Railway Street and the river be chosen for this purpose, several old cottages would have to be pulled down, to the advantage of the public health.

Hitchin.—Improvement but also deterioration constantly going on about Queen Street and St. Andrew's Street. There is much over-crowding, which it is difficult to find out, and still more difficult to

prevent. Overcrowding should be forbidden and the owners held responsible. It is suggested that it is to owners' interest to see that tenants keep their cottages clean and water-closets flushed.

Hoddesdon.—Sanitary dust-bins and flushing-cisterns for water-closets in old houses should be insisted on.

Rickmansworth.—A closing order against the Marble Arch Cottages has now been in force for three years.

Royston.—Overcrowding is frequent, owing to lack of cottages for poor artisans ; three cases have been remedied, 21 new houses have been built. Sundry minor improvements have been effected, and one cottage demolished.

St. Albans.—Many cottages in the poorer parts of the town will have before long to be condemned. It is suggested that the Corporation provide suitable buildings of the cottage type under the 1903 Act.

Sawbridgeworth.—The great need of suitable dwellings for the labouring classes is being met by private enterprise.

Ware.—Twenty-one new houses have been built. The provision of proper flushing-cisterns to water-closets is obligatory, and 84 have been thus supplied.

Watford.—Twenty-four insanitary houses in courts and alleys off the High Street have been repaired and 13 closed. The Medical Officer has with the Sanitary Inspector examined all the old house property, and devotes four pages of his report to detailed recommendations, including the declaring of Ballard's Buildings an unhealthy area, and their reconstruction under the Housing Acts. There is ample house accommodation for the labouring classes.

Rural Districts.—*Ashwell.*—No new houses have been erected. New buildings are not supervised, but certificates under "The Public Health (Water) Act, 1878," are obligatory. The District Council is in favour of the proposals of the Rural Housing and Sanitation Association.

Buntingford.—There is lack of suitable cottage accommodation, many being in bad condition. The building byelaws do not press too severely. Landlords are recommended to build on their estates.

Hadham.—The same remarks apply as for Buntingford.

Hatfield.—A fair number of houses for the labouring classes have been built, especially in parts of Hatfield and North Mimms.

Hertford.—Part of the Knebworth Estate near the Station is being developed. A considerable number of new houses will probably soon be erected.

St. Albans.—The new byelaws as to new streets and buildings are felt to be too stringent for strictly rural areas.

Welwyn.—Plans for five new houses have been passed during the year.

INSPECTION OF THE DISTRICTS. (Tables 34, 35.)

The printed form supplied by the County Council was used by nearly every Sanitary Inspector when making out his summary of work done during the year. It is hoped this year to revise the form, as the present headings are inconvenient and involve the Inspectors in a good deal of unnecessary trouble. In a few Districts somewhat different headings were adopted; but the tabulation of facts on similar lines is thus rendered impossible, and it is hoped in future the form will be invariably used.

The reports of the Sanitary Inspectors are generally left to speak for themselves; but a few Medical Officers mention with gratitude the services of these officials, who are, so to speak, their chief staff officers. Without a well-trained, keen, and tactful Inspector, the keenest Medical Officer is helpless, whereas a Sanitary Inspector of the right stamp can, in the course of his inspectorate, do an untold amount of good in the effective improvement of the public health. With the very efficient training of the Royal Sanitary Institute constantly preparing a number of fit men for the work, it behoves every District Council, in making a new appointment, to secure the ablest, rather than entrust the welfare of their District for the rest of his working days to an inferior man with local knowledge, which at the outset is rather a drawback than an advantage for such a post.

In Hitchin Rural, the largest district in the County, ill-provided with inside communications and containing many villages very backward in their sanitary arrangements, Mr. J. C. Hooper has been appointed Inspector under the Public Health and Factory Acts, and has already done much work. He succeeds an Inspector who, despite pressure, had not of recent years sent in his report in time for inclusion in the Report for the County; but Mr. Hooper's report of nine months' work gives some idea of the field to be covered.

The Medical Officer for the Middlesex and South Herts Combined District shows the large amount of work for which District Councils are responsible under the 1901 Factories' Act, and says it will be impossible for the Sanitary Inspectors to undertake this work in addition to their former duties, which fully occupied their time. At present, it appears, the Sanitary Inspector has also been appointed Inspector under this Act in every District in the County. It is probable that many at least of the more populous districts would be well-advised to combine in the joint appointment of an Inspector for this work only.

In Hertford Borough, a house-to-house inspection has been initiated. Of 2,000 inhabited houses, 222 cottages have been inspected, and a register of each visit is being kept, which should eventually be of great value.

At Ware, the offices of Surveyor and Sanitary Inspector are combined. Mr. J. E. Smales has resigned, and been succeeded by Mr. George Simcox, with an assistant, thus allowing more time to be devoted to sanitary inspection.

At Hoddesdon, Mr. W. H. Flood has been appointed Inspector since the resignation of Mr. R. Lindon, in May, 1905.

In Ware Rural District the Sanitary Inspector has been given clerical assistance, to enable him to spend less time over office work, on the recommendation of an Assistant Inspector of the Local Government Board, who made an inspection of the District during the year.

House-to-house inspection is also being conducted in Bishop's Stortford.

TABLE 34.—Summary of SANITARY WORK

(See also Factories and Workshops

Urban Sanitary Districts.	Complaints received.	Nuisances detected without complaint.	Nuisances abated.	Notices served.	Summonses taken out.	Convictions.	Cottages inspected.	Lodginghouses inspected.	Slaughterhouses inspected.	Bakehouses inspected.	Dairies and milkshops inspected.	Cowsheds inspected.	Workshops inspected.	Filthy houses cleansed, sec. 46 "Public Health Act, 1875."	Houses disinfected.	Overcrowding abated.	Houses placed in habitable repair.
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Baldock... ...	6	16	18	4	1	1	112	1	4	5	...	...	...	...	2	3	3
2. Barnet	11	...	27	29	...	...	401	2	10	6	3	8	...	7	7	1	3
3. Berkhampstead	13	...	98	16	...	...	...	1	7	8	7	...	38	...	13	...	...
4. Bishop's Stortford	20	80	80	3	0	0	600	2	6	10	0	8	51	2	10	2	0
5. Cheshunt ...	23	363	354	189	0	...	603	...	78	...	81		97	0	22	2	81
6. East Barnet Valley	5	47	52	44	...	...	68	1	4	5	3	5	...	...	42	1	11
7. Harpenden ...	40	170	186	35	0	0	245	0	5	7	5	5	34	50	1	2	25
8. HemelHempstead	35	94	76	98	1	1	120	6	8	16	30		25	11	110 r'ms	2	5
9. Hertford ...	33	9	42	11	...	...	222	...	8	8	3	12	10	3	16	2	5
10. Hitchin	7	36	41	...	...	...	373	...	12	19	14	8	71	...	22	2	...
11. Hoddesdon ...	13	31	44	2	...	...	190	...	7	6	13	13	32	...	9	2	...
12. Rickmansworth	100	20	110	16	...	...	34	...	8	11	10	7	37	2	35	1	1
13. Royston ...	13	12	28	22	0	0	260	0	4	5	5	5	50	0	5	2	10
14. St. Albans ...	57	395	452	308	...	...	675	4	11	22	11	...	137	...	39	1	...
15. Sawbridgeworth	...	25	12	0	...	...	200	...	2	4	...	2	10	...	3	2	1
16. Stevenage ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17. Tring	3	33	36	25	...	...	193	2	7	9	5	9	38	...	6	...	5
18. Ware	17	122	130	87	...	...	543	...	3	16	12	5	77	1	5	5	1
19. Watford ...	...	...	842	809	...	...	569	65	353	45	71		162	13	347 r'ms	10	...

BARNET.—Cesspools emptied, 2; cottages inspected, include all houses and premises; new inspection chambers and traps, 4; new ventilators, 2; fish shops inspected, 11; cowshed overcrowding abated, 4; cowshed repairs, 3; gypsy caravans removed, 2.

BERKHAMPSTEAD.—Drains unblocked and cleansed, 11; privies emptied and abolished, 13; cesspools emptied and abolished, 2; manure pits emptied, 3.

CHESHUNT.—New dustbins provided, 27.

N.B.—o signifies *nil*; ... signifies *not reported.*

Tables, 37 *and* 38, pp. 118, 119.)

18 Houses closed.	19 Houses erected or rebuilt for which Water "Certificates" were sought.	20 "Certificates" granted.	21 "Certificates" deferred.	22 Wells sunk or improved supplies of water afforded.	23 Wells cleansed or repaired.	24 Wells closed.	25 Houses connected with sewers.	26 Houses connected with water-mains.	27 Earth, pail, or improved privies constructed, or existing privies altered.	28 Privies and W.C.'s repaired; W.C.'s supplied with water.	29 Cisterns cleansed, repaired, or covered.	30 Animals improperly kept removed.	31 Samples of water taken for analysis.	32 Compensation paid for destruction of infected bedding.	33 Seizure of unsound meat, etc.	34 Canal boats inspected.	Inspectors.
2	1	1	0	0	0	1	1	0	0	2	0	...	1	0	0	...	Mr. William Munday.
3	...	...	...	...	...	...	3	...	...	12	...	...	...	...	1 bar'l	...	Mr. W. H. Mansbridge.
...	...	...	...	...	...	...	25	...	...	64	...	...	...	...	...	...	Mr. E. H. Adey.
0	58	0	0	0	0	0	58	63	0	8	2	0	5	0	0	8	Mr. W. Tripp.
1	...	...	...	5	0	5	0	5	7	51	2	17	5	0	0	...	Mr. F. Sykes, A.S.I.
...	...	...	...	...	...	...	...	...	...	30	20	3	...	...	...	..	Mr. H. York.
...	...	...	...	...	4	2	0	20	12	16	...	1	7	...	...	...	Mr. J. H. Leverton.
...	...	...	...	...	...	...	...	...	...	4	8	11	1	...	...	58	Mr. S. Rawson.
...	...	...	...	...	...	...	...	...	15		...	1	1	£ s. 3 11	...	...	Mr. R. G. Austin.
...	...	...	...	...	...	2	100	128	...	5	...	5	2	...	...	...	Mr. A. T. Blood.
...	27	27	...	...	...	...	27	27	...	5	...	...	...	...	...	...	Mr. W. H. Flood.
...	...	...	...	...	...	0	543	220	...	...	...	...	2	...	...	51	Mr. A. Freeman.
1	...	...	...	0	0	0	...	21	...	...	0	4	0	0	0	...	Mr. W. J. Webb.
...	...	...	...	...	...	...	...	...	...	17	79	...	...	...	...	...	Mr. A. S. Macara.
0	...	...	...	...	...	0	...	...	4	...	...	...	0	...	...	Inspections. 12	Mr. A. T. Watts.
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	Mr. J. Gillespie.
...	...	...	...	...	3	6	7	33	3	10	...	...	10	20/-	...	...	Mr. W. H. Thomas.
2	22	21	...	...	...	1	22	22	...	7; 84	...	...	4	...	...	Inspections. 138	Mr. G. Simcox.
...	...	...	...	...	...	...	...	4	...	...	...	4	0	...	fish and fruit	...	Mr. S. Jump.

HARPENDEN.—Constant supply laid on ; water drawn direct from mains.

HEMEL HEMPSTEAD.—Offensive accumulations removed, 6 ; defective spouting repaired, 9.

ROYSTON.—Travellers' vans visited, 40.

SAWBRIDGEWORTH.—Houses erected or rebuilt, 12 ; pumps repaired, 1.

ST. ALBANS.—Ashpits abolished 59, repaired 2 ; ashbins provided 326, repaired 6 ; manure pits provided 5, repaired 3.

WATFORD.—Travellers' vans visited, 32 ; fowl-runs abolished from back-yards, 32.

TABLE 35.—Summary of SANITARY

(See also Factories and Workshops

Rural Sanitary Districts.	1 Complaints received.	2 Nuisances detected without complaint.	3 Nuisances abated.	4 Notices served.	5 Summonses taken out.	6 Convictions.	7 Cottages inspected.	8 Lodginghouses inspected.	9 Slaughterhouses inspected.	10 Bakehouses inspected.	11 Dairies and milkshops inspected.	12 Cowsheds inspected.	13 Workshops inspected.	14 Filthy houses cleansed, sec. 46 "Public Health Act, 1875."	15 Houses disinfected.	16 Overcrowding abated.	17 Houses placed in habitable repair.
1. Ashwell	9	25	32	0	0	0	53	0	6	7	3	4	2	0	12	0	0
2. Barnet	3	27	26	27	...	...	278	...	3	2	12	10	2	...	15	2	1
3. Berkhampstead A	2	...	62	9	...	...	...	...	3	5	11	...	2	...	11	...	...
3. Berkhampstead B	2	11	13	13	...	...	90	...	2	6	2	15	5	...	11	...	...
4. Buntingford ...	12	53	47	27	...	...	283	2	4	5	7	10	22	3	13	1	5
5. Hadham	4	140	120	18	...	...	290	...	25	18	...	24	30	1	11	4	8
6. Hatfield	20	162	182	6	...	...	280	2	3	8	16	14	19	29	10	4	20
7. Hemel Hempstead	16	244	230	143	1	1	398	...	18	20	25		8	17	69 rooms	5	7
8. Hertford ...	6	33	38	9	...	...	300	...	3	8	...	38	50	...	5	3	20
9. Hitchin	3	50	50	12	0	...	530	0	5	13	25	30	50	1	18	2	2
10. St. Albans ...	5	...	9	79	...	...	...	...	...	...	...	...	...	...	55	...	...
11. Ware	56	203	210	40	...	...	490	...	9	15	...	40	75	6	33	17	14
12. Watford	120	...	29	105	...	...	789	...	6	20	4	47	75	11	94	3	11
13. Welwyn	10	30	30	...	...	...	40	1	3	4	4	3	7	...	2	1	3

BERKHAMPSTEAD B.—Drains cleansed, 6; privies emptied and abolished, 11; premises cleansed, 10; manure pits and cesspools emptied, 2; guttering to roofs repaired, 4.

HADHAM.—Schools disinfected, 3.

HEMEL HEMPSTEAD.—New drains provided, 9; drains ventilated and disconnected, 14; spouting repaired, 8; cottages limewashed, 44; manure bins provided, 4; cesspools constructed, 8; repaired, 6.

N.B.—0 signifies *nil*; ... signifies *not reported.*

WORK done in the *Rural* Districts, 1905.

(*...bles*, 37 *and* 38, pp. 118, 119.)

18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	Inspectors.
	Houses erected or rebuilt for which Water "Certificates" were sought.	"Certificates" granted.	"Certificates" deferred.	Wells sunk or improved supplies of water afforded.	Wells cleansed or repaired.	Wells closed.	Houses connected with sewers.	Houses connected with water-mains.	Earth, pail, or improved privies constructed or existing privies altered.	Privies and W.C.'s repaired; W.C.'s supplied with water.	Cisterns cleansed, repaired, or covered.	Animals improperly kept removed.	Samples of water taken for analysis.	Compensation paid for destruction of infected bedding.	Seizure of unsound meat, etc.	Canal-boats inspected.	
														£ s. d.			
...o	0	0	0	0	0	0	0	0	2	2	0	26	1	...	0	...	Mr. G. Baker
...	50	50	...	4	...	...	70	50	20	10	...	...	3	...	...	...	Mr. W. H. Mansbridge
...	...	...	...	...	...	...	...	...	...	12 ; 19	...	...	...	...	...	...	Mr. W. A. Thomas
...	...	...	...	...	...	...	...	2	...	...	...	...	4	...	...	...	Mr. E. H. Adey
...	6	6	...	1	1	...	17	...	8	5	...	1	3	...	...	...	Mr. E. G. Thody
...	8	7	...	...	3	...	2	...	8	15	...	...	...	...	...	...	Mr. E. T. Watts
...	27	27	...	3	11	1	4	10	40	16	2	6	4	3 18 6	...	...	Mr. H. T. Sidwell
...	...	...	...	3	11	...	4	13	23	17	6	4	2	...	...	48	Mr. S. Rawson
1	12	12	2	...	..	...	...	...	3	1	...	1	10	...	...	...	Mr. J. W. Riggs
1	245	245	0	...	2	2	183	227	73	11	...	0	6	...	...	...	Mr. J. C. Hooper
...	...	...	...	...	2	...	14	...	22	78	...	3	...	...	...	...	Mr. R. Blair Macara
1	20	20	...	9	4	...	9	13	21	27 ; 22	14	3	6	20 16 0	...	42	Mr. H. J. Jackson
...	...	38	...	...	...	...	37	22	41	11	...	3	9	...	...	117	Mr. J. Robinson
...	2	2	...	11	...	...	...	38	2	11	...	...	2	...	...	...	Mr. C. Deards

ST. ALBANS.—Ashbins provided, 4; gypsy caravans removed, 2.

WATFORD.—Privies abolished, 34; house drains repaired, 48; legal proceedings taken, 4.

WELWYN.—Ashpits and refills removed, 900.

PREMISES UNDER SUPERVISION.

Dairies, Cowsheds, and Milkshops.—A considerable portion of the heavy infantile mortality, more especially in hot weather, is due to contaminated milk; and numerous epidemics of scarlet fever, diphtheria, and infectious sore-throats, as well as of enteric fever, have been traced to the same source.

Since milk is so favourable a medium for the growth and dissemination of various organisms of disease, it is essential that the greatest possible care be taken to obtain and distribute it in a pure state. Fortunately, the public are beginning to appreciate this point, and are more solicitous than formerly as to its source and subsequent handling; and letters have been not infrequently received from influential residents during the past year, suggesting stringent action by the County Council for controlling and improving the milk-supply. Large towns must be mainly dependent on rural districts for their milk-supplies, and, as a consequence, the health of their infant population is greatly affected by the efficiency with which the rural authorities in the first place perform their duties.

London Demands.—The pressure of outside authorities is beginning to make itself felt. Complaints were received at Buntingford that the milk supplied to London from a farm was contaminated. The District Medical Officer, however, failed to find the bacillus supposed to be present in the milk on its arrival in London, and it was decided, therefore, not to take proceedings against the occupiers of the Dairy.

The London Sanitary Authorities, however, have had their attention turned to the impurity of the milk imported into London. Dr. Collingridge, Medical Officer of Health for the City, recently reported to the Corporation that of 25 specimens of milk sent up from 13 counties, 2 were tuberculous and 3 unsatisfactory.

Two of the London Boroughs, Willesden and Wood Green, have already obtained powers to investigate the sources of their milk-supply. As an example of the powers which it is sought to obtain for this purpose, may be taken the General Powers Bill of the London County Council which was introduced into Parliament last Session, and will probably be again brought forward with good prospect of its being carried, when the Royal Commission on Tuberculosis has issued its report. In this Bill it was proposed that the Medical Officer of Health of the London County Council, or his Deputy, together with a Veterinary Surgeon, shall be enabled to inspect any dairy supplying milk to London provided he shall have obtained an order from any Justice of the Peace for Hertfordshire, including several gentlemen, such as the London

Stipendiary Magistrates, not resident in the County. The dairyman must assist the Medical Officer of Health in his inspection, under a penalty of £5, and if the Medical Officer of Health report that in his opinion tuberculosis is likely to be caused from consumption of milk from that dairy, the London County Council may prevent the dairyman from supplying any milk to London. Considering the sensitive nature of the milk-trade, the suspicion that his milk was not good would probably be sufficient to deprive him also of his local custom. The London Authority would thus obtain complete powers for the extinction of any Hertfordshire dairy on a single opinion, against which the dairyman has no redress.

Proposals of the Herts County Council.—The Hertfordshire County Council are of opinion that, in the interest of the consumer, the local Authorities should be able to guarantee the good quality of the milk-supply; and that in the interest of the dairyman this should be effected by officials of the District or County Council on which both the producer and the chief consumers of any milk are represented. At the present time the milk-supply in Hertfordshire is supervised by Sanitary and Veterinary Inspectors and by District Medical Officers of Health, but with widely varying standards of efficiency. The County Council wish to secure improvements in the milk-supply, and at the same time to be in a position to resist any attempt of London Authorities to control interests which should be efficiently controlled by the Herts Sanitary Authorities.

The following proposals are therefore being made to the District Councils:—(1) That the registers of milk-premises be kept up-to-date by the Sanitary Inspectors, to include especially all shops where milk is retailed in small quantities, incidentally to other business; (2) that the regulations of the Sanitary Authorities as to cattle and milk-premises be brought up-to-date in accordance with "The Dairies, Cowsheds, and Milkshops Order, 1899," and distributed to all on the Register; (3) that "The Infectious Diseases Prevention Act, 1890," giving power to close milk-premises, be adopted and put in force, whenever possible; (4) that the Sanitary and Veterinary Inspectors be instructed to give facilities to the County Medical Officers to visit the milk-premises and watercress-beds under their control, and acquaint himself with their system of inspection.

Present Measures for Regulation of Milk-supplies.—The Dairies, Cowsheds, and Milkshops Orders of 1885, 1886, and 1899 contain provisions for supervision and regulation of the milk-trade. They require every person carrying on the trade of a cowkeeper, dairyman, or purveyor of milk to be registered with the Local Authority, who shall

keep a register and revise it from time to time. The Local Authority is authorised to make regulations for inspection of the cows, and with regard to other matters tending to keep the animals healthy and the milk free from contamination.

During the last winter inquiries were made by direction of the County Council with the view of ascertaining how far the milk-supply of this county was under due supervision. The information gathered may be best considered under the following headings :—

Registration.—In all Urban Districts, this year including *Baldock*, a register is kept, but in several instances it was not revised up to date. In some, as a result of my communications on the subject, this revision is being undertaken.

Regulations.—No Regulations have been issued by the Urban District Council of *Stevenage*. Several of the other District Councils might with advantage, as suggested for *Barnet* Rural, revise their Regulations in accordance with the present Model Regulations of the Local Government Board. This has been done in *Hitchin* and *Watford* Rural Districts during 1905; but in *Barnet* Rural District the Chairman, on proposing revision, could not even find a seconder.

Inspection.—This is carried out in all Districts, but in the absence of the new Regulations it is difficult, and in some instances impossible, to enforce satisfactory conditions. Copies of the Regulations should be circulated and inspected by the Inspector on his visits.

Veterinary Inspection.—*St. Albans* Corporation and *St. Albans* Rural District Council have appointed a veterinary surgeon to make periodical inspection of the cowsheds, tuberculous cows are isolated, and the sale of their milk stopped. In the Urban District of *Rickmansworth* the Medical Officer of Health and in the *Watford* Rural District the Sanitary Inspector are empowered to call in a veterinary surgeon when they consider it necessary. The experience of St. Albans has amply justified the appointment of a Veterinary Inspector. The remaining Urban and Rural District Councils have taken no action.

The importance of obtaining a pure milk-supply has led many of the Local Authorities in all parts of England to adopt "The Infectious Diseases (Prevention) Act of 1890," by which they obtain power of preventing the sale of infected milk and power of inspection outside their own districts, and latterly there has been a tendency to obtain further power of control by means of Local Acts. It cannot be too strongly urged on all District Councils to see that the powers they already possess are fully utilised, namely, registration, inspection, and the enforcement of regulations; and it is hoped that it may be

unnecessary to exert any pressure to obtain so urgent and so reasonable an improvement.

There is definite information of this Act having been recently or previously adopted in *Bishop's Stortford*, *Cheshunt*, *Harpenden*, *St. Albans*, and *Watford* Urban, and *Ashwell* and *Hadham* Rural Districts, and in the greater part of the Middlesex and South Herts Combined District. *Hatfield* proposes to adopt it.

Baldock sends no milk away, and like several other Urban Districts, is averse to further action; but the measures proposed are as much to the interest of the local consumer as of the local producer. In *Baldock* it appears that milkers usually wash their hands well, but the cow's teats indifferently. In many other Districts no attempts are made either to wash hands or udders, or to brush the flanks of the cows before milking, and the dirt that falls or is washed by the milk into the pail in these ordinary circumstances is indescribably foul.

In *Harpenden* it is reported that there is much room for improvement in the cowsheds, but they all have water laid on from the mains. In *Watford* various alterations have been effected with one exception, one of the worst cowsheds, against which action must be taken.

The Medical Officer of Health for *Rickmansworth* refers to a recent letter from the Board of Agriculture to Local Authorities, asking them in case of adulteration to give the vendor a chance of explaining the facts before taking action. He remarks that the regulations are at present framed for the benefit of the vendor, and that no further benefit should be given him at the expense of the consumer.

I hope to inspect milk premises frequently in the near future in the company of the Sanitary Inspectors, and report to the District and Parish Councils' Committee accordingly.

Slaughterhouses.—The provision of a public abattoir is constantly urged in the reports for *Hertford* Borough, *Rickmansworth*, *St. Albans* City, *Ware*, and *Watford*; the unsuitability of the surroundings of many of the present slaughterhouses, and the difficulties in the way of efficient inspection, are widely commented on. The following facts are recorded:—

In *Barnet*, *Berkhampstead*, and *Tring* Urban Districts respectively, 5, 7, and 7 such premises are registered, but only 1 is licensed, as now required forall new slaughterhouses; in *Hoddesdon* the slaughterhouses are old but clean; in *Hertford* several are old and badly situated; in *Rickmansworth* they are all connected with sewers; in *St. Albans* Rural they are neither registered nor licensed, but regulations are in force; and in *Hitchin* Rural there are 6 such premises, without register, regulations, or any direct control.

The scandals lately created in the United States by a Federal Report on the meat-packing industry at Chicago, the general grounds of which I can endorse from private experience, has strongly raised public opinion on the subject of the meat-trade, and it is urgently suggested that the County Council consider what steps they can take in the matter.

URBAN DISTRICTS.—*Barnet*, 5 registered, none licensed; *Berkhampstead*, 5 registered, none licensed; *Hemel Hempstead Borough*, 12; *Hertford Borough*, old and badly situated; *Hoddesdon*, old but clean; *Sawbridgeworth*, 1; *Ware*, not good; *Watford*, one fined £5 and owner of carcase £10 for having a carcase diseased with anthrax dressed for sale.

RURAL DISTRICTS.—*Barnet*, 2; *Berkhampstead*, 3, none licensed; *Hemel Hempstead*, 7; *Watford*, 6; *Welwyn*, 3.

Common Lodginghouses. — URBAN DISTRICTS. — *Barnet*, 2, and 1 unregistered public-house, reported in previous years; *Berkhampstead*, 1; *Cheshunt*, none; *Hemel Hempstead*, 3; *Hitchin*, 3; *St. Albans*, 3, and 1 unregistered; *Tring*, 1; *Hertford Borough* and *Ware*, under supervision of Superintendent of Police; *Watford*, 3.

RURAL DISTRICTS.—*Hemel Hempstead* and *Watford*, none; *Hertford*, under supervision of Superintendent of Police; *Welwyn*, 1.

Pressure should be brought to bear in the *Barnet* case, reported for several years. The offence is punishable by a fine of 40*s*. a day by Section 86 of "The Public Health Act, 1875." A letter to the District Council is suggested.

Factories and Workshops.—These now, by the Act of 1901, for the first time come within the domain of Sanitary Authorities.

The following Tables are prepared:—(1) Table 36, from the last Report of H.M. Inspector of Factories at the Home Office, giving the returns for 1901, the next triennial returns for 1904 not having yet been published; (2) Tables 37, 38, from the Annual Reports now filled in by every District Medical Officer of Health on forms prepared by the Home Office. Very few lists of outworkers have been received. Employers are bound by the Act to furnish them half-yearly. Names and other information will kindly be given to any Medical Officer of Health on application to Mr. C. F. Wright, H.M. Inspector of Factories for the North London District, 39, Victoria Street, S.W. A few extra facts given in the Reports are as follows:—

TABLE 36.

NUMBERS EMPLOYED IN HERTFORDSHIRE FACTORIES.

Persons employed in Textile Factories:		Persons employed in Non-Textile Factories:	
1901.	**1898–1899.**	**1901.**	**1898–1899.**
127	241	10,344	8,706

Persons employed in Non-Textile Factories (various trades), 1901.

Print, Bleach, and Dye Works	2
Gas	200
Indiarubber, etc.	83
Electricity, Generation of	39
Wood	1,103
Hides, Skins, and Fur	291
Clay, Stone, etc.	246
Metals, Founding and Conversion of	109
Machines, Conveyances, Appliances, Tools	645
Chemicals, etc.	545
Boxes, etc.	55
Furniture, etc.	317
Food	698
Drink	1,065
Clothing, Making up of	1,289
Jewellery, etc.	140
Paper, Printing, Stationery, etc.	3,468
Explosives	26
Miscellaneous	23
	10,344

Age and Sex.

Children employed as Half-timers	Males	1	
	Females	—	
Persons under 18 years of age employed as Full-timers	Males	1,193	
	Females	983	
Persons above 18 years of age	Males	6,386	
	Females	1,781	
Total	Males	7,580	= 10,344
	Females	2,764	

No. of workshops in Hertfordshire:—about 1,164.

1. Urban Districts.	2. No. Workshops etc., on Register	3. Number of Inspections.				4. Bakehouses.		5. Defects found (not including Bakehouses).		6. Outworkers.	
		Factories.	Workshops.	Workplaces.	Home-workers.	Number.	Underground (in use).	Under P. H. A.	Under F. W. A.	Lists.	Workers.
1 Baldock	4	3	7	...	...	...	...	...	...	...	...
2 Barnet...	...	...	...	...	...	...	...	...	...	...	...
3 Berkhampstead...	44	...	38	...	...	...	...	...	...	...	...
4 Bishop's Stortford	73	10	48	12	17	...	...	3	2	7	...
5 Cheshunt	42	17	97	...	...	16	...	11	5	3	23
6 East Barnet Valley	20	12	10	...	...	6	3	...	...	6	3
7 Harpenden... ...	37	4	40		6	...	0	16	1	2	34
8 Hemel Hempstead	86	...	...	...	...	17	...	...	...	...	...
9 Hertford	63	...	11	...	...	...	...	5	0	...	...
10 Hitchin	69	26	65		4	...	0	8	...	1	4
11 Hoddesdon ...	35	...	56	...	...	...	...	...	...	...	...
12 Rickmansworth...	37	...	45	...	...	8	1	14	...	...	...
13 Royston	50	0	115	...	12	5	...	0	0	4	7
14 St. Albans	137	50	119	18	...	23	5	11	1	20	462
15 Sawbridgeworth	34	...	...	10	...	5	...	0	0	0	0
16 Stevenage... ...	53		12		...	...	...	...	...	...	...
17 Tring...	44	...	...	...	...	...	...	0	0	...	...
18 Ware	92	...	77	...	...	...	...	...	...	...	...
19 Watford	236	53	288	32	15	45	11	111	0	6	16

BARNET.—No steps taken to carry out the Act of 1901.

BERKHAMPSTEAD.—The work is being attended to by the Sanitary Inspector; the appointment of an Inspector solely for this work is recommended.

BISHOP'S STORTFORD.—Outworkers used to be mostly engaged in fur-pulling, but this is now removed to a factory.

CHESHUNT.—Workshops in which more than 40 are employed, 1; Laundries, 3.

HEMEL HEMPSTEAD.—Including six Laundries.

RICKMANSWORTH.—Bakeries, 8; Milliners and Dressmakers, 9; Builders and Plumbers, 5; Wheelwrights and Blacksmiths, 3; Cycle Repairers, 3; Tailors, 3; Boot Factory, 1; Miscellaneous Workshops, 5. "The Public Health Act (Amendment) Act, 1890," has been adopted, but no standard has yet been fixed.

ROYSTON.—Bakehouses, 5; Bootmakers, 5; Bicycle-makers, 3; Blacksmiths, 3; Basket-makers, 2; Builders, 4; Carpenters, 1; Coachbuilders, 2; Dressmakers, 8; Masons, 2; Plumbers, 3; Photographer, 1; Saddlers, 3; Tailors, 3; Watchmakers, 2; Wheelwright, 1; Cabinet-makers and Upholsterers, 2.

1. RURAL DISTRICTS.	2. No. Workshops etc., on Register	3. Number of Inspections.				4. Bakehouses.		5. Defects found (not including Bakehouses).		6. Outworkers.	
		Factories.	Work-shops.	Work-places.	Home-workers.	Number.	Under-ground (in use)	Under P. H. A.	Under F. W. A	Lists.	Workers.
1 Ashwell	...	...	...	...	...	8	...	..	...	...	...
2 Barnet...	4	...	...	...	...	4	...	2	...	...	...
3 Berkhampstead...	...	...	3	...	...	...	2	...	...	...	...
4 Buntingford ...	29	...	29	...	...	...	...	3	...	...	...
5 Hadham	39	...	48	...	...	...	...	0	0	...	...
6 Hatfield	19	...	...	various	...	...	...	7	...	...	...
7 Hemel Hempstead	39	...	52	...	...	9	...	18	...	...	...
8 Hertford	54	...	50	...	...	...	...	4	...	...	...
9 Hitchin	43	7	43	0	0	...	0	5	...	0	...
10 St. Albans	64	21	64	...	...	19	1	0	0	0	0
11 Ware	38	...	72	3	...	...	...	3	...	...	...
12 Watford	90	...	...	...	..	20	...	0	0	...	...
13 Welwyn	9	...	...	...	...	4	0	...	...	...	...

URBAN DISTRICTS (*continued*).

SAWBRIDGEWORTH.—Workshops, 13 ; Factories, 0 ; Workplaces, 16 ; Bakehouses, 5.

ST. ALBANS.—(Factories, 50) ; Straw Hat Factories, Silk Mills, Printing Works, Boot Factories, Laundries, etc. Workshop Bakehouses, 23 ; other Workshops, 96 ; Workplaces, 18.

WARE.—Only 2 factories, employing more than 40 men.

WATFORD.—Factories, 29 ; Bakehouses, 45 ; Dressmakers and Milliners, 27 ; Tailors, 10 ; Bootmakers, 10 ; Wheelwrights, Smiths, Cycle Repairers, Saddlers, etc., 35 ; other trades, 80.

RURAL DISTRICTS.

ASHWELL.—Bakehouses, 8 ; Blacksmiths, 8 ; Bootmakers, 7 ; Carpenters, 4 ; Saddlers, 2 ; Tailors, 4 ; Wheelwrights, 4 ; Dressmakers and Milliners, several. (Not registered.) No systematic inspection.

BARNET.—Two of these are Laundries.

BUNTINGFORD.—This work is being carried out as far as possible by the Inspector of Nuisances.

HITCHIN.—About 5 Factories in the District, 2 of which have been built on the Garden City Estate during the year.

ST. ALBANS (4 factories and 64 workshops).—Bakers, 19 ; Brushmakers, 1 ; Silkworks, 1 ; Fellmongers, 1 ; Jam-makers, 1 ; Saddlers, 4 ; Tailors, 5 ; Straw Hat Makers, 2 ; Laundries, 6 ; Dressmakers, 6 ; Builders, 8 ; Flour Mills, 8 ; Plumbers, 3 ; Carpenters, 8 ; Printers, 3 ; Cycle Works, 1 ; Brick-kilns, 4 ; Farriers, 3 ; Chandlers, 1. There are 5 factories and workshops, which employ more than 40 persons.

WATFORD. — Domestic Workshops, 13 ; Retail Bakehouses, 20 ; other workshops, 57.

MIDWIVES.

"The Midwives Act, 1902," came into operation on the 1st April, 1903. All existing midwives, claiming to be certified under this Act, are required to have registered their names with the Local Supervising Authority before the 1st April, 1905; after that date no woman, unless certified under this Act, may use any title or description implying that she is specially qualified to practise midwifery. But the provision forbidding uncertified midwives to attend childbirth, otherwise than under the direction of a qualified medical practitioner, does not come into force until April, 1910.

The Act provides that every Council of a County or County Borough throughout England and Wales shall, from the commencement of this Act, be the Local Supervising Authority over midwives within the area of the said County or County Borough. The Local Supervising Authority may delegate their powers to a Committee appointed by them, and consisting either wholly or partly of members of the Council, or they may delegate their powers to District Councils.

At the meeting of the Hertfordshire County Council on 24th January, 1904, it was resolved—"That the powers of the County Council "under 'The Midwives Act, 1902,' be, and they are hereby, delegated "to the District and Parish Councils Committee, and that the acts and "proceedings of the Committee with regard to the powers and duties "thus delegated to them shall not be required to be submitted to the "County Council for approval." This resolution is in accordance with the opinion expressed by a large majority of the County Councils throughout the country.

Efforts have been made to obtain the names of all persons practising as midwives in this county, and to each a notice has been sent setting out the provisions of this Act. The County Medical Officer of Health visits the midwives individually for purposes of supervision.

The number of midwives registered in the County is 111, 32 others having died, retired from practice, or left the County. Among those now practising, 37 have the License of the Obstetrical Society, 2 the Queen Charlotte's Hospital Diploma, 1 the diploma of the Glasgow Maternity Hospital, 1 the diploma of the City of London Hospital, and 1 the Certificate by examination of the Central Midwives' Board. There are 8 Queen's Jubilee Nurses among the number, and others working for District Nursing Associations. These numbers are probably incomplete.

The whole number have been inspected since the beginning of 1905, some of them twice or oftener, and in most cases there was improvement between the two visits; there is, however, room for more improvement. A large proportion are untrained midwives, who have been

practising for years, and who find it somewhat difficult to conform to the new Regulations, and to get used to the details required of them. Of the 111, 31 have still no register of cases, 8 who have a register either do not keep it at all or do so in an untidy manner and irregularly. Some keep a fairly accurate account in notebook or on paper. Many have no copies of rules, or do not read them, while there is much haziness as to the Act, and some scepticism as to its usefulness. Very few keep records in the special book intended for the purpose of occasions on which the doctor is sent for.

Among the midwives there are 13 who are illiterate or nearly so; many cannot read the thermometer. Some of those who have been practising for years have extremely antiquated appliances. On the other hand the bags or tin boxes of instruments are in many cases excellent, and attention is being paid to washing, detachable linings, and the cleanliness of instruments, though in a few cases the instruments were noticeably dirty, and the hands or nails of the midwives needed attention. In some places the personal cleanliness and tidiness of the midwives, and the order of their houses or cottages, leave much to be desired. Some houses were found to be untidy, but the midwife clean; sometimes the reverse was the case; while sometimes both were unsatisfactory. A few are very poor, and have few cases during the year, competition making a livelihood almost impossible for them.

The fees are as various as the midwives themselves. Some say that they often get nothing for attending confinements in a poor neighbourhood. The charges vary according as the case is attended with or without a doctor—2*s.* 6*d.*, 3*s.*, 6*s.*, 7*s.*, and 10*s.* 6*d.* for the confinement and ten days attendance. A few have their food, helping in the house, and even doing the washing. Others charge 10*s.* 6*d.*, 16*s.*, and £1 a week, and in some cases the payment is made to the Committee or Association employing the nurse, while the Nurse receives a definite salary, together with board, lodging, and various extras. This salary varies from £30 a year with an allowance for board and lodging to £100 without board or lodging.

There are 16 midwives working for Associations, one for a workhouse and the remainder working privately.

The number of cases attended by any one midwife varies very greatly, viz. from 2 to 330 in a year. Many of the nurses do general nursing as well as midwifery.

Eighteen notices of application for medical help have been sent to the County Medical Officer of Health, who found, however, on investigating the circumstances that no further action was required. Six notices of stillborn infants were sent, two notices of premature births,

and one of a child who only lived 1½ hours. Some midwives work only under a doctor, some usually alone.

TABLE 39.—DISTRIBUTION OF MIDWIVES PRACTISING IN HERTFORDSHIRE, JUNE, 1906.

DISTRICTS.	POPULATION.	NO. OF MIDWIVES.
Urban—		
Baldock	1,960	1
Barnet	9,162	2
Berkhampstead	5,401	1
Bishop's Stortford	7,400	0
Cheshunt	13,641	1
East Barnet Valley	11,300	1
Harpenden	5,368	1
Hemel Hempstead	11,989	4
Hertford	9,560	2
Hitchin	10,710	4
Hoddesdon	5,000	4
Rickmansworth	6,430	3
Royston	3,605	4
St. Albans	17,800	9
Sawbridgeworth	2,220	0
Stevenage	4,250	2
Tring	4,349	1
Ware	5,710	5
Watford	34,633	5
Rural—		
Ashwell	3,953	3
Barnet	4,535	1
Berkhampstead	5,984	3
Buntingford	4,900	4
Hadham	5,270	5
Hatfield	7,551	1
Hemel Hempstead	6,012	5
Hertford	7,600	8
Hitchin	12,290	11
St. Albans	13,383	4
Ware	11,100	6
Watford	19,964	3
Welwyn	2,284	2
Outside the County	...	5
	Total ...	111

As will be seen from this Table, there are several districts very thinly supplied with midwives. This is plainly shown by the map at the end of this Report. Hatfield Rural, Barnet Urban, and part of Hertford Rural may be mentioned specially, but Cheshunt Urban, with a population of 13,641, has only one midwife, and Bishop's Stortford Urban, with 7,400, has none. Others are well supplied, as St. Albans City, with a population of 17,800 and 9 midwives, and Hitchin Rural, with a population of 12,290 and 11 midwives. Doubtless the distribution will eventually be more even throughout the County.

The possibility of the formation of Nursing Associations for the training of suitable women to undertake this work, as recently done at Wheathampstead for the 18 year old daughter of a small farmer, to supplement the services of the trained nurse of the Local Association, is strongly commended to the wealthier residents of the community as an act of very real and useful philanthropy.

A new edition of the Midwives' Rules has been drawn up by the Central Midwives Board, and will be issued as soon as it has been passed by the Privy Council. It is suggested that the County Council should bear the small expense required for the distribution of copies of these Rules.

The cards with regard to the feeding of infants have been much used, and a new edition has been issued. The distribution of these should be done consistently by the midwife. There is no doubt that they are of the greatest use to the mothers, who are often troubled to know how to do their best for their children. By kindly and judicious help and advice, the midwives may be most effective missionaries of Hygiene in the homes of the poorer classes.

Miss E. M. Burnside was appointed on June 1st, 1906, to take office on September 1st, 1906, as Lady Inspector of Midwives. This step marks a distinct advance in the Public Health administration of the County. The County Council is to be congratulated on having secured Miss Burnside's services, and it is hoped she will soon be in touch with all throughout the County who are officially or unofficially interested in the great possibilities for good centreing round the work of the midwives.

EMPLOYMENT OF CHILDREN.

This Act came into operation on the 1st January, 1904. It provides that no child under the age of eleven years shall be employed in street trading. A child under the age of fourteen shall not be employed between the hours of nine in the evening and six in the morning, nor shall he be employed in any occupation likely to injure his health. A Local Authority has power to vary, by byelaw, the hours specified above, and may also regulate street trading by persons under sixteen years of age.

The expression "Local Authority" means, in the case of a Municipal Borough with a population according to the census of 1901 of over 10,000, the Borough Council, and, in the case of any other Urban District with a population according to the census of 1901 of over 20,000, the District Council, and elsewhere the County Council.

At the meeting of the Hertfordshire County Council on the 24th January, 1904, it was resolved—"That for the present no action be "taken by the County Council under 'The Employment of Children "Act, 1903,' in making Byelaws for the regulation of the employment "of children, and of street trading by persons under sixteen years "of age."

BYELAWS AND REGULATIONS.

Table 40.—Byelaws and Regulations.

Districts.	New Streets and Buildings.	Common Lodging-houses.	Slaughterhouses.	Dairies, Cowsheds, and Milkshops.	Nuisances.	House Refuse.	Cleaning Footways and Pavements.	Good Rule and Government.	Tents, Sheds, and Vans.	Recreation Ground.	Mortuary.
Urban.											
Baldock	...	...	...	x	...	...	...	...	...	...	...
Barnet	x	x	x	x	x	...	x	...	...	x	...
Berkhampstead ...	...	...	...	old	...	...	...	...	...	...	...
Bishop's Stortford ...	Urgt' need'd	x	x	x	...	...	...	...	...	...	...
Cheshunt	...	...	...	x	...	...	...	...	...	...	...
East Barnet Valley	...	...	...	x	...	...	...	...	...	...	...
Harpenden	x	x	x	x	x	...	...	...	...	...	...
Hemel Hempstead...	...	x	x	x	x	x	...	x	...	...	...
Hertford	x	x	x	x	x	...	x	x	...	...	...
Hitchin	...	...	x	x	...	...	...	...	...	...	...
Hoddesdon	...	...	...	x	...	...	...	...	...	...	x
Rickmansworth ...	...	...	...	x	...	...	...	...	...	...	...
Royston	...	...	...	x	...	...	...	...	...	...	...
St. Albans	x	x	...	x	x	...	...	x	...	x	...
Sawbridgeworth ...	...	...	...	x	...	...	...	...	...	...	...
Stevenage	...	...	...	...	...	...	...	...	...	...	...
Tring	x	x	x	x	x	...	x	...	...	...	...
Ware	...	x	x	x	...	...	...	...	...	...	...
Watford	...	...	...	old	...	...	...	...	...	...	...
Rural.											
Ashwell	...	...	...	x	...	...	...	...	...	...	...
Barnet	...	...	...	old	...	...	...	...	...	...	...
Berkhampstead ...	x	x	x	x	x	x	x	...	...	...	...
Buntingford... ...	...	...	...	x	...	...	...	...	...	...	...
Hadham	...	...	...	x	...	...	...	...	...	...	...
Hatfield	...	...	...	old	...	...	...	...	...	...	...
Hemel Hempstead...	x	x	x	old	x	...	...	...	...	...	...
Hertford	...	...	...	x	...	...	...	...	...	...	...
Hitchin	x	...	...	x	...	...	...	...	...	...	...
St. Albans	new	...	x	x	x	...	...	...	...	...	...
Ware	...	...	...	x	...	...	...	...	...	...	...
Watford	x	x	x	x	x	x	x	...	x	...	...
Welwyn	x	...	...	x	x	...	...	...	...	...	...

Urban.

Baldock.—It is again suggested that the general Byelaws of the Council be revised and brought up to date.

Berkhampstead.—The new Byelaws of the Local Government Board are now in force, but for what purposes is not stated.

Bishop's Stortford.—A petition has been signed by the butchers of the town to rescind the Byelaw respecting the killing of pigs.

Cheshunt.—Council still considering the amendment of Byelaws.

Harpenden.—Also for houses let in lodgings or occupied by members of more than one family.

Hertford.—Also as to flushing of Water Closets, Cleansing of Earth Closets, and as to Water Supply.

RURAL.

Hatfield.—The subject of new Building Byelaws has been under consideration.

Hemel Hempstead.—These Byelaws are not all in accordance with the Model Byelaws, and in many cases require revision.

Hitchin.—Other Byelaws are still necessary for the District, and it is suggested that these be adopted at an early date.

St. Albans.—Arrangements have been made with the town of St. Albans to use their Mortuary. The present Byelaws in force as to New Streets and Buildings are new and up to date, but it is felt by the Council that less stringent Byelaws are needed to be applied only to truly rural parts of the district. The matter is under consideration.

Watford.—Also as to cleansing of Ash-pits.

Table 41.—Financial Position of Districts.

Urban Districts.	Union.	Assessable Value.	Product of 1*d.* Rate.		
		£	£	*s.*	*d.*
1. Baldock	in Hitchin	8079	33	13	3
2. Barnet	„ Barnet	47249	196	17	5
3. Berkhampstead	„ Berkhampstead	35447	147	13	11
4. Bishop's Stortford	„ Bishop's Stortford	43585	181	12	1
5. Cheshunt	„ Edmonton	80282	334	10	2
6. East Barnet Valley	„ Barnet	92637	385	19	9
7. Harpenden	„ St. Albans	37565	156	10	5
8. Hemel Hempstead	„ Hemel Hempstead	56783	236	11	11
9. Hertford	„ Hertford	51385	214	2	1
10. Hitchin	„ Hitchin	54345	226	8	9
11. Hoddesdon	„ Ware	31343	130	1	11
12. Rickmansworth	„ Watford	24971	104	0	11
13. Royston	„ Royston	16314	67	19	6
14. St. Albans	„ St. Albans	85348	355	12	4
15. Sawbridgeworth	„ Bishop's Stortford	15651	65	4	3
16. Stevenage	„ Hitchin	29418	122	11	6
17. Tring	„ Berkhampstead	22595	94	2	11
18. Ware	„ Ware	30466	126	18	10
19. Watford	„ Watford	159837	665	19	9

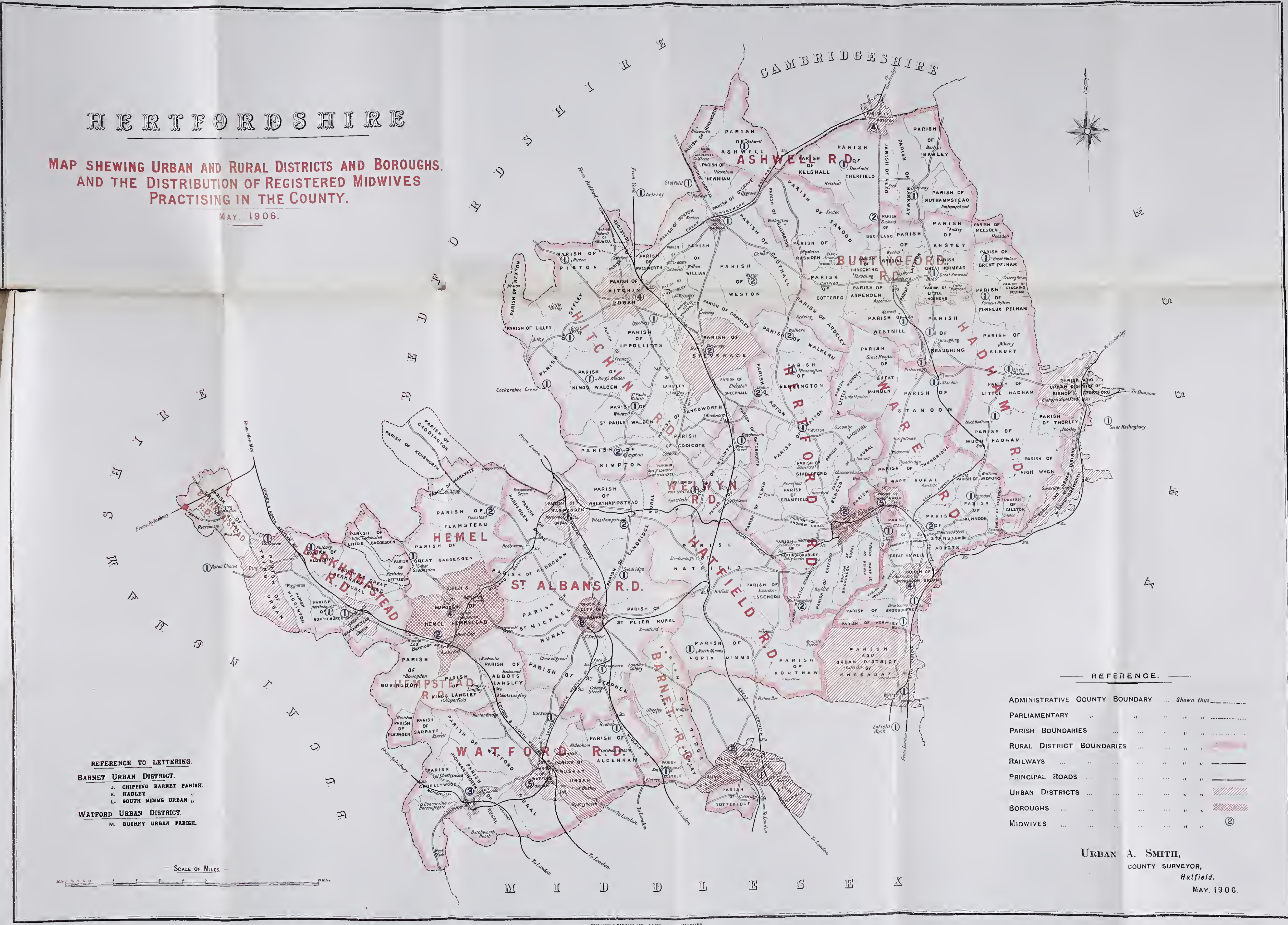
For financial position of Rural Districts see p. 128.

TABLE 41 (*continued*).—FINANCIAL POSITION OF DISTRICTS.

RURAL DISTRICTS.	Union.	Assessable Value.	Product of 1*d.* Rate.		
		£	£	*s.*	*d.*
1. Ashwell	in Royston	16344	68	2	0
2. Barnet	„ Barnet	42496	177	1	4
3. Berkhampstead ..	„ Berkhampstead ..	45793	190	16	1
4. Buntingford	„ Buntingford	20817	86	14	9
5. Hadham	„ Bishop's Stortford ..	29844	124	7	0
6. Hatfield	„ Hatfield	68218	284	4	10
7. Hemel Hempstead ..	„ Hemel Hempstead ..	36643	152	13	7
8. Hertford	„ Hertford	42780	178	5	0
9. Hitchin	„ Hitchin	77373	322	7	9
10. St. Albans	„ St. Albans	107681	448	13	5
11. Ware	„ Ware	72246	301	0	6
12. Watford	„ Watford	189820	790	18	4
13. Welwyn	„ Welwyn	30375	126	11	3

TABLE 42.—CHIEF STATISTICS OF URBAN AND RURAL DISTRICTS, 1905.

District.	Population. By Estimate, 1905.	Population. By Census, 1901.	Population. By Census, 1891.	Acreage uncovered by Water.	Inhab. Houses, 1901.	Pop. per House, 1901.	Birth-Rate. 1905.	Birth-Rate. 1904.	Birth-Rate. 6 years.	Nett Death-Rate. 1905.	Nett Death-Rate. 1904.	Nett Death-Rate. 6 years.	Infant Mortality. 1905.	Infant Mortality. 1904.	Infant Mortality. 6 years.	Epidemic Death-Rate. 1905.	Epidemic Death-Rate. 1904.	Epidemic Death-Rate. 6 years.	Death-Rate from Diarrhœa. 1905.	Death-Rate from Diarrhœa. 1904.	Death-Rate from Diarrhœa. 6 years.	Death-Rate from Phthisis. 1905.	Death-Rate from Phthisis. 1904.	Death-Rate from Phthisis. 6 years.	Death-Rate from Cancer. 1905.	Death-Rate from Cancer. 1904.	Death-Rate from Cancer. 6 years.	Senile Deaths. Percentage over 65. 1905.	Senile Deaths. Percentage over 65. 1904.	Senile Deaths. Percentage over 65. 5 years.
Urban.																														
1. Baldock	1,960	2,057	2,301	263	504	4·08	25·5	24·2	22·9	18·3	15·6	15·6	120	104	136	2·5	1·0	1·1	1·5	·5	·6	1·0	1·0	·9	·5	1·0	·9	47·2	48	40·4
2. Barnet	9,162	7,876	6,437	679	1,481	5·3	26·3	23·9	24·4	11·8	12·5	13·0	112	88	105	1·0	·0	·9	·2	·0	·4	1·0	1·3	1·1	·2	·8	·8	36·7	40·2	28·6
3. Berkhampstead	5,401	5,140	4,574	1,088	1,053	4·8	21·1	20·1	20·4	14·0	14·9	12·6	87	125	91	·6	1·5	·7	·4	·5	·3	1·3	1·6	1·1	·4	1·1	·6	43·4	38·9	41·2
4. Bishop's Stortford	7,400	7,143	6,595	3,272	1,629	4·3	23·9	21·5	22·5	11·4	14·6	13·6	113	146	99	·7	1·6	·9	·0	·4	·6	·1	·9	·8	·8	·7	·9	40·9	28·0	39·9
5. Cheshunt	13,641	12,292	9,620	8,403	2,480	4·95	25·1	26·2	26·9	11·1	13·2	11·9	108	123	106	·5	1·5	1·3	·3	1·1	·6	·6	·5	·5	·9	·9	·8	29·7	27·2	26·9
6. East Barnet Valley	11,300	10,094	7,715	2,631	1,918	5·3	20·6	20·5	22·5	8·7	9·4	9·2	77	115	88	·3	·7	·7	·1	·5	·2	·5	·5	·5	·5	·7	·6	35·3	33·6	33·7
7. Harpenden	5,368	4,725	3,603	1,631	1,024	4·6	20·3	18·1	20·0	11·1	12·7	10·9	36	159	93	·6	2·3	·7	·4	·6	·6	1·3	1·0	1·0	·6	·8	·8	40·0	24·0	34·8
8. Hemel Hempstead	11,989	11,264	9,678	7,151	2,503	4·5	25·1	28·4	25·9	13·1	13·8	13·6	82	124	99	·3	·7	·6	·1	·3	·2	1·0	1·0	1·1	1·2	·8	1·0	40·5	39·0	38·7
9. Hertford	9,560	9,322	9,023	1,098	1,970	4·7	24·4	22·1	23·7	14·4	13·1	14·8	111	123	112	·3	·6	·9	·3	·5	·3	·6	·6	·9	·9	1·4	1·2	28·9	31·0	32·4
10. Hitchin	10,710	10,072	8,860	2,617	2,198	4·6	18·5	25·4	23·0	11·6	14·6	14·0	105	123	112	·5	1·9	1·0	·2	·6	1·1	·7	1·1	·9	·7	·6	·9	33·6	46·0	37·1
11. Hoddesdon	5,000	4,711	3,975	1,547	1,029	4·6	24·8	28·6	24·5	14·2	14·2	13·3	129	142	126	1·4	1·0	1·1	·4	·8	·5	1·6	1·4	1·0	1·4	1·4	·8	26·8	30·0	33·8
12. Rickmansworth	6,430	5,627	4,769	556	1,181	4·76	23·9	25·1	26·6	11·0	10·2	11·3	117	64	99	·8	·3	·9	·0	·0	·2	1·6	·3	1·1	·9	1·0	·6	26·8	36	29·0
13. Royston	3,605	3,517	3,318	1,003	805	4·4	21·3	22·0	21·2	10·8	12·5	12·2	111	113	95	·0	1·1	·6	·0	1·1	·2	·8	·6	·9	1·7	·3	1·5	35·9	53	44·2
14. St. Albans	17,800	16,019	12,898	989	3,394	4·7	20·8	21·4	22·7	11·5	12·8	12·1	73	104	92	·3	·9	1·0	·2	·9	·4	1·1	1·1	1·0	1·7	1·3	1·1	34·5	41·5	37·3
15. Sawbridgeworth	2,220	2,085	2,165	2,653	461	4·5	21·6	26·1	21·4	13·9	10·3	10·2	42	34	70	·5	·5	·4	·0	·5	·1	·9	·9	·9	2·3	1·8	1·0	54·8	39·1	44·3
16. Stevenage	4,250	3,957	3,309	4,544	898	4·4	28·8	27·6	27·8	9·2	12·4	12·2	34	69	79	·2	·2	·6	·0	·2	·1	·9	1·2	1·1	1·6	·7	·8	32·4	48	39·4
17. Tring	4,349	4,349	4,525	4,364	1,040	4·2	24·6	21·1	22·0	14·4	11·2	12·9	65	76	87	·7	1·3	1·2	·5	·4	·5	·7	·2	·4	1·6	1·3	1·1	49·2	39	43·2
18. Ware	5,710	5,573	5,256	612	1,188	4·7	32·2	30·8	31·3	11·5	17·6	16·6	76	114	104	·0	1·9	1·1	·5	1·5	·6	·7	1·4	1·0	1·7	·5	·7	27·3	44	35·4
19. Watford	34,633	29,327	17,063	1,613	6,196	4·7	27·3	28·0	28·6	10·7	11·4	11·9	84	100	104	1·3	1·6	1·4	·5	·8	·5	·9	·9	·9	·7	·8	·6	29·3	27	26·3
Rural.																														
1. Ashwell	3,953	3,953	4,680	22,039	969	4·1	22·3	21·2	20·6	14·4	14·9	16·6	123	59	106	·3	·0	·3	·0	·0	·1	1·8	·3	·9	1·3	1·8	1·1	42·1	54	52·2
2. Barnet	4,535	4,637	3,945	11,620	917	5·1	24·2	25·1	24·3	9·0	11·4	11·0	72	113	93	·4	1·2	·9	·0	1·2	·4	1·1	·8	1·7	·0	1·2	·7	17·1	40	28
3. Berkhampstead	5,984	5,939	6,193	18,270	1,350	4·4	22·0	22·0	21·6	10·5	15·0	12·8	113	174	112	·2	1·3	·9	·2	·5	·5	1·0	·3	·7	·2	1·0	·8	49·2	40	40
4. Buntingford	4,900	5,020	5,660	28,430	1,204	4·2	19·6	25·7	21·9	12·6	14·5	14	52	118	80	·2	1·4	·6	·0	·6	·3	·8	1·4	·9	1·2	1·0	1·0	59·7	54	53·4
5. Hadham	5,270	5,382	5,849	25,493	1,310	4·1	25·2	22·5	22·7	14·4	14·1	14·0	53	93	78	1·7	1·1	·8	·4	·7	·3	·8	·6	·8	1·1	·6	·8	50	45	49·5
6. Hatfield	7,551	7,551	6,963	23,386	1,576	4·8	24·1	25·5	26·1	11·9	13·3	12·4	44	129	95	·8	1·7	1·1	·1	·9	·5	1·2	1·1	1·0	1·0	1·0	·9	39·3	31	36·8
7. Hemel Hempstead	6,012	6,012	6,127	19,965	1,380	4·3	19·7	20·4	21·5	12·6	11·9	12·8	114	146	115	·2	·6	·7	·0	·6	·3	·8	1·1	·8	·7	·5	·6	44·8	38	32·7
8. Hertford	7,600	7,715	8,170	34,176	1,681	4·6	22·5	22·9	22·0	11·9	12·0	12·5	70	91	79	·3	·8	·6	·3	1·1	·1	·9	1·1	·7	·9	·6	1·0	45	49	46·3
9. Hitchin	12,290	12,663	13,125	59,321	2,892	4·4	20·2	25·7	23·6	11·7	12·8	12·4	92	88	87	·4	1·4	1·0	·2	1·1	·5	·8	·5	·6	1·1	·7	·7	45·1	46	43·7
10. St. Albans	13,383	12,264	10,371	38,668	2,573	4·3	28·2	28·9	27·4	13·8	13·2	12·7	103	100	104	·5	1·4	·9	·0	·5	·4	1·0	1·0	1·1	·9	·8	·6	32·9	28	32·9
11. Ware	11,100	10,890	10,392	33,721	2,277	4·8	20·4	21·0	21·0	10·9	12·0	11·2	75	65	63	·7	·3	·7	·2	·1	·2	·6	·9	·8	·9	·6	·6	36·4	51	42·8
12. Watford	19,964	18,982	17,082	34,487	3,456	5·5	17·1	15·6	16·7	8·7	8·5	9·4	73	87	101	·3	·4	·5	·2	·2	·2	·4	·6	·9	1·1	·6	·8	45·4	36	36·6
13. Welwyn	2,284	2,265	2,346	6,566	485	4·6	25·3	25·8	25·5	20·1	8·7	12·2	155	101	101	1·8	1·3	·8	·6	·3	·5	1·8	·9	1·0	1·8	·0	1·2	47·8	10	40·3


HERTFORDSHIRE
MAP SHEWING URBAN AND RURAL DISTRICTS AND BOROUGHS. AND THE DISTRIBUTION OF REGISTERED MIDWIVES PRACTISING IN THE COUNTY.
MAY, 1906.
BEDFORDSHIRE
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ASHWELL R.D.
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WATFORD R.D.
BARNET R.D.
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BARNET URBAN DISTRICT.
J. CHIPPING BARNET PARISH.
K. HADLEY "
L. SOUTH MIMMS URBAN "
WATFORD URBAN DISTRICT.
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SCALE OF MILES.
REFERENCE.
ADMINISTRATIVE COUNTY BOUNDARY ... Shewn thus
PARLIAMENTARY " " ... " "
PARISH BOUNDARIES ... ... " "
RURAL DISTRICT BOUNDARIES ... ... " "
RAILWAYS ... . " "
PRINCIPAL ROADS ... ... " "
URBAN DISTRICTS ... ... " "
BOROUGHS ... ... " "
MIDWIVES ... ... " " ②
URBAN A. SMITH,
COUNTY SURVEYOR,
Hatfield.
MAY, 1906.